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DAILY MAIL

IDEAL HOME
EXHIBITION

This year's garden feature at the Ideal Home Exhibition is something entirely original – "Gardens by the River". It would be well worthwhile for any gardener to make a special journey to Olympia just to see the gardens exhibit alone. And there's so much else besides!

These leading firms will be represented in the gardens:

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Frank Cant & Co. Ltd.
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Messrs. Wallace & Barr
Wells (Mersham) Limited
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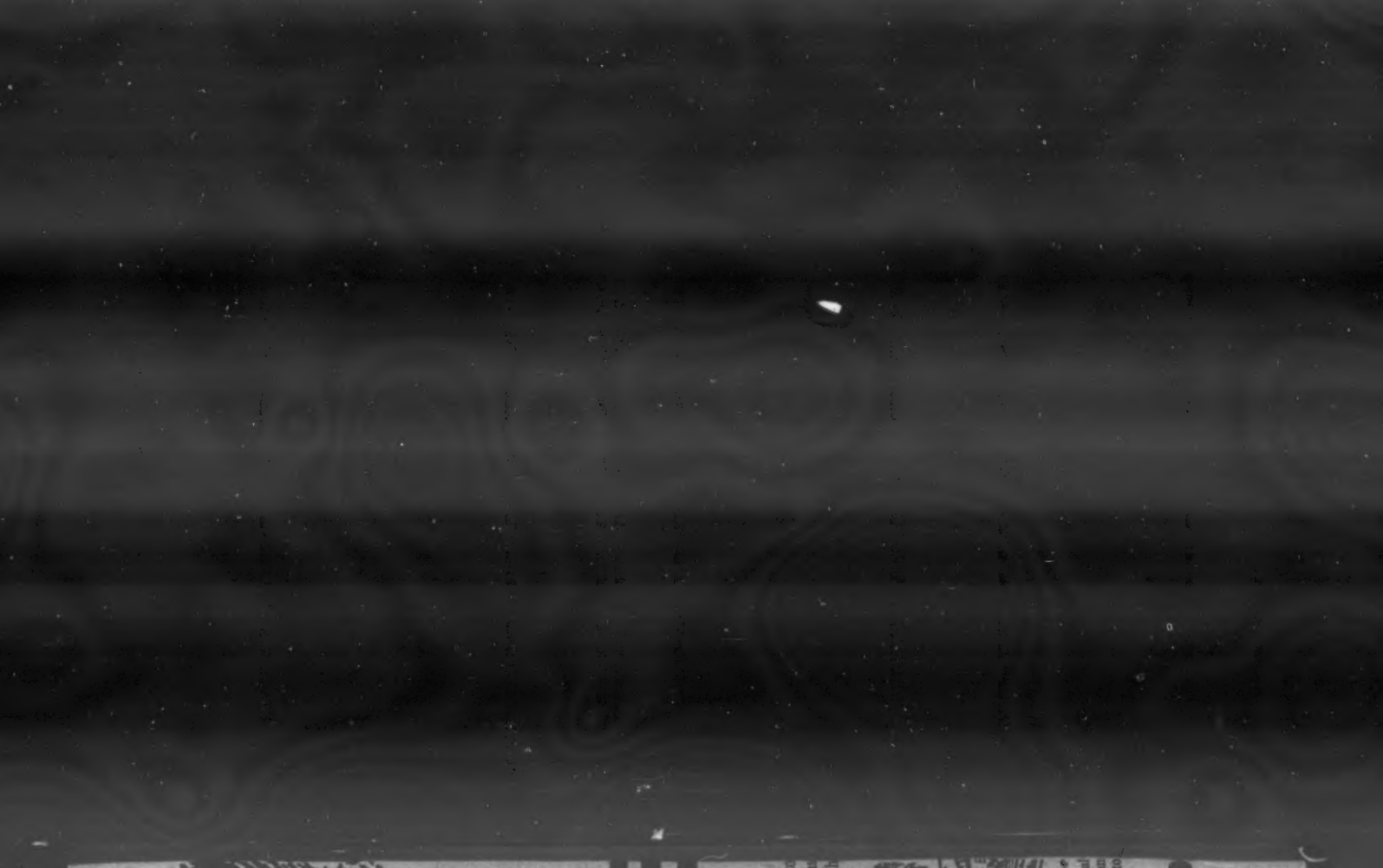
Gardens by the River is the theme of this year's Ideal Gardens Show. You'll find it an inspiration and a challenge to your own gardening skill.

FREE ADMISSION TO THE GARDENS is available up to 1 p.m. each day for Fellows of the Royal Horticultural Society and holders of Fellows' transferable tickets.

OLYMPIA · MARCH 3-29

OPEN DAILY (except Sundays) 10 a.m. – 10 p.m. March 3rd only closes at 6 p.m. Tickets obtainable at the entrance, or from Keith Prowse & Co. Ltd., and all agents – no booking fee.



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JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

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THE SECRETARY'S PAGE

ANNOUNCEMENTS—MARCH AND APRIL

Shows

TUESDAY, March 4 12 NOON to 6 P.M. WEDNESDAY, March 5 10 A.M. to 5 P.M.	Fortnightly Flower Show and Alpine Garden Society's Competition, in the New Hall.
WEDNESDAY, March 5 12 NOON to 6 P.M.	Floral Arrangement Competition, in the Old Hall.
TUESDAY, March 18 12 NOON to 6 P.M.	Fortnightly Flower Show, in the New Hall.
WEDNESDAY, March 19 10 A.M. to 5 P.M.	British Orchid Growers' Association's Show, in the Old Hall.
TUESDAY, April 1 12 NOON to 6 P.M.	Fortnightly Flower Show and Daffodil Competition, in the New Hall.
WEDNESDAY, April 2 10 A.M. to 5 P.M.	Alpine Garden Society's Show, in the Old Hall.
TUESDAY, April 15 12.30 P.M. to 6 P.M. WEDNESDAY, April 16 10 A.M. to 5 P.M.	Fortnightly Flower Show, Camellia Competition, and Sewell Medal Alpine-house and Rock-garden Plant Competition for Horticultural Traders, in the New Hall. Daffodil Show, in the Old Hall.
TUESDAY, April 29 12.30 P.M. to 6 P.M. WEDNESDAY, April 30 10 A.M. to 5 P.M.	Fortnightly Flower Show and National Rose Society's Competition, in the Old Hall. Rhododendron Show, in the New Hall. National Auricula and Primula Society's Competition (April 30 only), in a Committee Room in the New Hall.

Lectures

TUESDAY, March 4, at 3 P.M. "Ring Culture of Tomatoes", by MR. F. W. ALLERTON, B.SC., DIP. HORT., A.R.I.C.

TUESDAY, March 18, at 3 P.M. "Asparagus", by MR. A. W. SECRETT.

TUESDAY, April 1, at 3 P.M. "Choice Rock Plants", by MR. R. C. ELLIOTT.

TUESDAY, April 15, at 3 P.M. "Camellias and their cultivation", by MR. F. E. W. HANGER, V.M.H.

TUESDAY, April 29, at 3 P.M. "Glimpses of Horticulture in the United States and Honolulu", by MR. J. S. L. GILMOUR, M.A., F.L.S., V.M.H.

Demonstrations at Wisley—The following demonstrations will be given at Wisley, that on the second day being in each case a repetition of that given on the first.

March 5–6. Seed Sowing and Vegetative Propagation of Alpines. (Commencing at 2 P.M.)

March 19–20. Pests and Diseases of Fruit Trees; Recognition and Methods of Control. (Commencing at 2 P.M.)

Camellia Competition—The annual Camellia Competition will be held in conjunction with the Fortnightly Show on April 15 and 16. The Schedule, which may be obtained on application to the Secretary, is similar to that for last year's Competition but contains a new class for *Camellia saluenensis*.

Rhododendron Show—The annual Rhododendron Show will be held in conjunction with the Fortnightly Show on April 29 and 30. The Schedule may be obtained on application to the Secretary.

Wisley Gardens: Reduced Admission by Ticket—At the Annual General Meeting in 1957 the President referred to the very large number of visitors to the Wisley Gardens and said that if there were so many visitors that the Gardens became uncomfortably crowded their value to Fellows would be reduced. He explained that it was thought that the petrol rationing which was then in force would probably ease the situation, but in the near future it might be necessary to reduce the number of persons who could obtain admission on presentation of one ticket. Happily, petrol rationing has ceased, but unhappily, as was anticipated, the Gardens have become uncomfortably crowded at certain times, especially at week-ends. Consequently, in the interest of Fellows, who provide the Gardens, and for whose use they are primarily intended, the Council decided that from January 1, 1958, each ticket should admit only two persons.

The Restaurant at Wisley—The Restaurant in the Gardens will be open at the following times during 1958:

March 26 to October 12 (excluding Good Friday)

Weekdays: 10.30 A.M. to 6 P.M. (or sunset, whichever is the earlier).

Sundays: 2 P.M. to 5.30 P.M. (to last Sunday in September).
2 P.M. to 4.30 P.M. (Sundays, October 5 and 12).

The restaurant will provide a cafeteria service of cold lunches (weekdays only), sandwiches, cakes, tea, coffee and other light refreshments. There will also be a waitress service for hot lunches on weekdays. The restaurant is licensed for the service of alcoholic refreshments with meals.

Reservations for teas by large parties may be made only for Mondays (excluding Bank Holidays) to Fridays. Organizers should make arrangements, not with the Society, but direct with the caterer, Mrs. D. Badcock, The Oak Cottage, Shere, nr. Guildford, Surrey (*Tel.* Shere 168).

Picnicking is not allowed in the Gardens.

Gardens at Daily Mail Ideal Home Exhibition—This annual Exhibition will be held at Olympia in 1958 from March 3 to March 29. As usual the Gardens laid out in the Annexe of the Grand Hall will be one of the most attractive features of the Exhibition. Fellows' and Associates' tickets will give free admission to the Gardens Annexe (but not to the rest of the Exhibition) any day from 10 A.M. to 1 P.M.

Gardens open to the Public—The List of Gardens in England and Wales opening to the public under the National Gardens Scheme in 1958 may be obtained from The Organizing Secretary, National Gardens Scheme, 57 Lower Belgrave Street, London, S.W.1, price 2*s.* 0*d.*; by post 2*s.* 6*d.*

Lectures and "Brains Trust" on Carnations—The British National Carnation Society has arranged for three lectures and a "Brains Trust" on Carnations to be held in the Lecture Room of the New Hall at 2 P.M. on Saturday, March 29. Fellows of the Society will be welcome. The meeting will be preceded by a luncheon at 12 NOON for 12.30 P.M. in the Restaurant of the New Hall. Fellows wishing to take lunch should obtain tickets in advance (price 15*s.*) from The General Secretary, The British National Carnation Society, 83 Woodwarde Road, London, S.E.22 (FOR 8110).

WISLEY IN MARCH

As spring approaches, plants in all parts of the Gardens begin to show signs of renewed activity, and flowers make a welcome appearance on many shrubs and bulbous plants; but nowhere is there so bright a display as in the alpine house, and even on a cold or wet day an enjoyable hour or two may be spent there.

The provision of flowering plants for the adornment of this house requires attention all the year round. The plants selected are not of necessity too tender to survive in the open air, but many are early-flowering and liable to be damaged by adverse weather outside, while

others are small or of low growth and can be more fully enjoyed if displayed nearer to eye-level. After planting in pots of convenient dimensions the plants are kept in frames or plunged in an outside bed until their flowering is imminent and are then taken into the house to replace others which are going over. Repotting, watering and protection against insect pests require vigilant care.

Saxifrages are especially prominent at the present time, both species and hybrids being well represented. *Saxifraga grisebachii*, typical of the Engleria section, always attracts notice as its arched inflorescences, covered with crimson hairs, rise from the silver-grey rosettes of leaves. This striking plant comes from Albania and Greece. The related *S. media*, of the same section but less spectacular, comes from the Pyrenees. It is the parent of a good many hybrids. One of the most deservedly popular species is *S. burseriana*, perhaps the best of the Kabschia section, with relatively large, glistening flowers on short, erect stalks above densely clustered silver rosettes. It is variable in nature and several large-flowered, named forms are in cultivation. This and others of the same section have been hybridized extensively with species of several other sections to produce many lovely seedlings. In the Wisley collection can be seen 'Riverslea', with flowers of purplish rose, which came from a cross between *S. lilacina*, a Himalayan of the Kabschia section and *S. porophylla*, a pink-flowered plant of the Engleria section; 'Myra', of deep red, whose parents are believed to be *S. lilacina* and the Macedonian *S. scardica*; 'Paulinae', a compact plant with primrose blooms, bred from *S. burseriana minor* and *S. ferdinandi-coburgii*, a yellow-flowered Bulgarian Kabschia and 'Harry Marshall', which is larger and of better colour than the pale lilac-pink *burseriana* hybrid 'Irvingii' from which it was produced by a cross with *S. lilacina*.

The small-flowered cyclamens are very satisfactory pot plants for the alpine house, as they do not require frequent repotting and the individual flowers last well. By a judicious selection of material it is possible to have flowers from August, when *Cyclamen europaeum* opens its scented blooms, until April or May, when *C. repandum* is out. At the present time *C. orbiculatum* and its varieties are at their best. This is the plant, usually known as *C. ibericum* or *C. vernum*, with rather chubby carmine, pink or white flowers blotched at the base of their broad petals, held on almost erect peduncles over tufts of roundish leaves marked with silver above. *C. coum*, with unblotched leaves, is now held to be a variety of *C. orbiculatum*, and the plant generally distributed as *C. atkinsii* is said to be either a form of that species or a cross between the typical plant and *C. coum*. *C. libanoticum*, a fragrant species with usually toothed leaves, is scarcely reliable outside, but a desirable plant for the house. Another species to be seen at Wisley is *C. creticum*, a plant with very small, narrow-petalled flowers, sometimes confused with *C. repandum*, and reported to differ in having two extra chromosomes, a character of little consequence to the practical gardener.

Plants of many other genera are at their best in this house, and they include such primulas as the colour-forms of *Primula allionii*, forming little cushions of pink, rose or white blooms, the reliable and profuse *P. marginata* and other European species and hybrids. There are pans of various bulbous plants, such as *Scilla tubergeniana*, remarkable for the number of pale mauve flowers each bulb produces; the hybrid *Chionoscilla* which blends the characters of its parent genera; varieties of *Iris reticulata*; and the smaller narcissi.

The shady borders beneath the staging have, in the course of time, become carpeted with various unobtrusive plants which ask for no special care. Prominent among these are *Parochetus communis*, the Shamrock Pea, which makes mats of angular, blotched, clover-like leaves studded with bright blue flowers; *Corydalis wilsonii*, with tufts of grey-green, fern-like foliage and sprays of canary-yellow blossom; *Polygonum capitatum*, a neat, spreading perennial with globular flower heads held erect above soft-green, patterned leaves; and *Adiantum venustum*, a Himalayan maidenhair fern just hardy enough to live in sheltered places out of doors.

Into the care of the rock garden department there came, last October, a consignment of bulbs and roots collected by MESSRS. DAVIS and HEDGE in Turkey. These were all potted and kept through the winter in frames. As these notes are written in early January, many are showing signs of renewed growth; and one, a form of *Iris persica*, is actually flowering. The collection contains about a dozen different irises, several belonging to the Oncocylus section so striking in floral characters but difficult to keep in our climate. There are also a number of crocuses, cyclamens, ornithogalums and alliums, which may be expected to survive the long journey and to provide some interesting flowers in the near future. There are also some quaint aroids of the genera *Biarum* and *Eminium*, and the uncommon *Leontice*, a yellow-flowered herb related to *Berberis*. On his 1956 expedition DR. DAVIS rediscovered *Cyclamen pseudibericum*, a large-flowered vernal species difficult in cultivation, of which, up to the present, all the stocks in gardens are thought to have come from a few tubers sent in a collection of cyclamen from Western Asia Minor.

The seeds of many alpine plants are sown in pots during the present month. A hint which may be of use to some readers is that seeds with feathery plumes, such as *Pulsatilla*, or others like anemones with a dense woolly coat, will germinate better if covered with a quarter-inch layer of fine shingle instead of soil or sand. Another task which will be completed as weather permits is the top-dressing of the rock garden with a mixture of two parts loam and one each of sand and peat, to improve the quality of the soil and replace that lost in weeding during the year.

Regular visitors will notice that the yuccas have been removed from the mound near the Long Ponds to a new site at the other end of the alpine meadow. The levelling of the mound, which involved the removal of about fifty cubic yards of soil, and returfing, have effected a considerable improvement to the approach to the rock garden.

On Battleston Hill, if the weather be reasonably mild, many different rhododendrons will be in flower. Some of the species one may expect to see are *Rhododendron barbatum*, with compact trusses of scarlet flowers and bristly twigs; *R. eclecteum* and *R. stewartianum*, two variable species of the Thomsonii Series, which may have pink, white or yellow blooms; *R. sutchuenense*, a shapely shrub or tree notable for its handsome foliage and bold heads of rosy-lilac or pink bells; and *R. oreodoxa*, which like the preceding belongs to the Fortunei Series and is a floriferous shrub requiring some protection from frost. There is a possibility that *R. macabeanum*, one of the most handsome of the kinds which in nature form large trees, may produce flowers. The Wisley specimens are still young and cannot be expected to flower freely for some time to come. Some very meritorious hybrids out now are 'Tessa' (*moupinense* × *praecox*), an admirable plant for the smaller garden, annually covering itself with medium-sized, rosy-purple flowers; 'Cilpinense' (*ciliatum* × *moupinense*), a small-leaved evergreen of good compact habit, freely producing white or pink-flushed blooms; and 'Portia' (*euchaites* × *strigillosum*), scarlet-flowered and quite arresting when seen among dark evergreens and illuminated by the sun. On the south slopes of the hill there are extensive plantings of hybrids raised at Wisley during the past ten years, and many of these may be expected to be showing flower for the first time.

The growth of bulbous plants is usually rapid in March, and careful watch is kept for the young shoots of such plants as *Lilium regale* and others which may require a little temporary covering on cold nights. A severe frost can, in a night, ruin the display of *L. regale*. A number of groups of the hardier *Agapanthus* hybrids are being planted in the borders from which the hedges of *Rhododendron luteum* were recently removed. Like other perennials on the borderline of hardiness, these are best transplanted just as growth begins. It is hoped that their late summer flowers will add to the attraction of this area when the rhododendrons are over.

This is a busy season in the propagating department. There will be trials this year of nicotiana, lobelia, salpiglossis and dwarf bedding dahlias, all of which are raised from seed, pricked off in boxes and pots, and later require gradual hardening before being planted out. The same treatment will be given to tomatoes and self-blanching celery plants for trial. All the plants required for the trial collections of tall dahlias and early-flowering chrysanthemums are raised from cuttings, as are the large numbers of plants used in the summer bedding. Finally, this department is responsible for the provision of material for the maintenance of the perennial collections in the Gardens.

THE GENUS *ERYTHRONIUM*

E. B. Anderson, M.Sc.

(*A discussion held at the Lily Group Meeting on June* 18, 1957, SIR FREDERICK STERN, O.B.E., M.C., F.L.S., V.M.H., *in the Chair. This paper and a fuller account of the discussion was published in* The Lily Year Book 1958.)

THE CHAIRMAN: This afternoon we are doing something rather different from what we have done since, I think, 1932, when the Lily Group started. We are having a discussion on a different Liliaceous bulbous plant. It has been decided that once a year we shall have a discussion on some Liliaceous plants other than lilies, fritillaries or nomocharis and I shall be obliged if anybody can suggest any other Liliaceous plant which they would like to discuss at another meeting another year.

Today we are discussing erythroniums and I am looking forward to the discussion with great interest. They are most decorative bulbs and very charming, as I have seen them in other gardens. I have tried only two on the chalk. They do fairly well and have been there for a long time.

MR. ANDERSON grows them very well. We all ought to grow them, and I am sure that after this lecture today we shall.

MR. E. B. ANDERSON: I doubt whether there is any genus of dwarf spring-flowering, bulbous (cormous) plants in the Liliaceae more beautiful than the erythroniums and on the whole more easily cultivated.

THE SPECIES

The common dog's tooth violet, *Erythronium dens-canis*, so named because of the resemblance of the corms to the canine tooth of a dog, is widespread in Europe and sub-species extend as far afield as Siberia, the Caucasus, Japan and Korea. With such a wide range, as one would expect, there is a considerable variation, both in colour, varying from white to pale and deep pink and lavender to mauve and in size of flower and leaf. Judging from herbarium specimens at Kew the largest flowered plants come from the provinces of Venetia in Italy and Styria in Austria, where flowers 2½ inches in diameter occur. The greatest development seems to be in the sub-species *E. dens-canis sibiricum* and *E. dens-canis japonicum* where 6- to 8-inch scapes bear flowers 3 inches across. The former was in cultivation at one time at Kew, and W. IRVING remarked on its size and rich purple flowers. It is interesting to recall that the Siberian chives, *Allium schaenoprasum sibiricum*, is much larger than the type. My one bulb of *Erythronium dens-canis japonicum* has not yet provided flowers of the size mentioned. All the *E. dens-canis* forms are native to woodland, often on limestone.

Next we come to eastern North America where the somewhat more

pleasant names, Trout Lily, Fawn Lily or Adder's Tongue are in common use. The two former refer to the leaf markings on some species, and I assume the latter to refer to the narrow-leaved eastern forms, the leaves of which may be likened to the Adder's Tongue fern. There are four eastern species native to dry areas in woodlands. These are: *E. americanum*, with solitary bright yellow flowers having reddish dots at the base of the tepals; *E. albidum*, usually with white flowers, bluish outside and yellowish internally at the base but varying to purple-grey and pink—both these have long, narrow, marbled leaves; *E. mesachoreum*, with white flowers and unmarked leaves, producing no offsets but the freest in bloom according to PROFESSOR WHERRY; and *E. propullans*, not worth growing. In its home *E. americanum* increases rapidly but flowers poorly. At the Edinburgh Botanic Garden I have seen it flowering apparently freely and also increasing. One of my correspondents recommends planting at least 3 inches deep. You will be aware of the fact that deep planting tends to restrain vegetative increase. *E. albidum* is in cultivation also. I am not yet in a position to report on its cultivation, but like *E. americanum* it is native to woodlands and therefore should like some shade and leaf-mould. An article in The National *Geographical Magazine* for 1939 by E. S. CLEMENTS suggests that flowering is conditioned by the depth at which the corms are resting. In soft yielding forest soil they are pulled down by the contractile roots until they can go no further, until then they produce single leaves only and no flowers. Once they reach a stable position or is it stable conditions, they produce two leaves and flower freely. This process takes four to eight years. This habit seems to vary with the character of the soil and it is suggested that in firmer soil, flowering plants are the rule not the exception. I suggest therefore that the corms of *E. americanum*, *albidum* and *mesachoreum* should be planted as deep as is necessary to find a stable base which may be from 6 to 12 inches down.

These are mere preliminaries to the great development of the genus which occurs west of the Rocky Mountains, stretching from British Columbia through Washington and Oregon into northern California with a step into Idaho. In this area there are eighteen species and subspecies, having, some plain green and some brown marbled leaves, from which character they derive the name of Fawn or Trout lilies. They range in colour from white through cream to golden yellow on the one hand and from pale to deep rose-pink and lavender on the other.

Depending very much on conditions, the flower stems may be anything from 6 inches to a couple of feet tall, bearing from one to four or more flowers about 2 to 3 inches across. With me, the stems are nearer one foot than two, bearing up to four flowers. There has been a great deal of confusion in the naming of these plants, but the monograph on these western species by PROFESSOR ELMER APPLEGATE of Stanford University which originally appeared in *Madrono*, Vol. 3, appears to have cleared things up and his classification is accepted by Kew. A copy of the key appeared in *The New Flora and Sylva*, Vol. 9, p. 265.

It is impossible to deal in detail with all the species. I will content myself therefore with those most likely to be in cultivation or obtainable in some form or other from America.

There are two main groups, those with plain green leaves and those in which they are marbled in brown. Within these groups the species are distinguished by flower colour, type of stigma, entire or lobed; the anther filament, filiform or dilated; anther colour, and whether there are small appendages or protuberances at the base of the inner tepals or not.

The species with green leaves are essentially plants of the high mountains but descend into the yellow-pine region east of the Cascades.

The first section of the green-leaved group, distinguished by an entire stigma, contains *E. purpurascens* and *E. tuolumnense*, and the lesser known *E. klamathense* and *E. nudopetalum*. The first has white flowers with a yellow base, usually small, but with six to eight on the scape. I have never tried it as it is usually described as a poor thing, but herbarium specimens suggest that forms with larger flowers do exist; locations given for these are Mt. Lassen, Plumas Co., California, and Boist City, Idaho. The outstanding plant in this group is *E. tuolumnense* from California. It has one or more golden yellow flowers on 15-inch stems. It possesses the great virtue of increasing freely by offsets but rarely sets seed (Fig. 33).

The next section has species with lobed stigmas. Flowers, one to several, golden yellow. The most important is *E. grandiflorum* (*giganteum*), with red anthers, and its sub-species, *E. g. pallidum* (*E. g. parviflorum*, *E. parviflorum*), with white or cream anthers, and *E. g. chrysandrum*, with golden yellow ones. It is strange that these species are so uncommon in this country, as the first and last are so common in America that among other places they grow in cultivated fields. So far the only one I have flowered is the last. To this group belongs also the exquisite *E. montanum*, the Avalanche Lily, whose white flowers appear in countless millions as the snow recedes, particularly on Mt. Hood and Mt. Rainier. Like many plants which love to bathe in snow water, it appears to be extremely difficult if not impossible of cultivation, even in its own country. I can find no record of its having flowered here, but I suggest it would be worth trying in those Scottish gardens where difficult primulas do so well. Here also belongs *E. idahoense*, bearing single white flowers about 3 inches across, which also goes under the name of *E. grandiflorum albiflorum*.

We now come to the species with marbled leaves, these are essentially plants of the lowlands and foothills and therefore have been more available to gardeners in this country from collections made by CARL PURDY.

The first section again has entire stigmas. It contains two species with white or cream flowers which become pink at the tips with age. They are *E. howellii* and *E. citrinum*. They are modest plants with up to three flowers on 6-inch stems. They are distinguished by the

appendages at the base of the petals of *E. citrinum*. The most beautiful plant in this group is *E. hendersonii*, with dark-eyed lavender flowers on 8-inch stems (Fig. 31).

The second section in the marble-leaved series has lobed stigmas, strongly dilated anther filaments and appendages, and it contains three of the most beautiful and valuable garden plants. The first is *E. revolutum*, with several deep rose-pink flowers on 8-inch stems; this species has a great number of synonyms, *E. revolutum johnsonii*, *E. johnsonii*, *E. smithii* and *E. grandiflorum smithii*; these all represent true *E. revolutum*. On the other hand, *E. revolutum bolanderi* and *E. revolutum watsonii* are not *E. revolutum* at all, but either *E. oregonum* or *E. californicum*. It is a native of moist woods from N. California to British Columbia and is said to attain its greatest development near the Oregon coast in a region of maximum rainfall, where 18-inch stems may carry flowers 5 inches across!

The next two in this series bear white or creamy-white blossoms with brown or yellow basal markings. They are *E. oregonum* (*E. giganteum*, *E. grandiflorum albiflorum*), with golden anthers, and *E. oregonum leucandrum* (*E. giganteum*), with white anthers. The former with me bears 10-inch stems with single flowers, probably because I have it in too dry a place, as it is a native of dense damp woods from Oregon to British Columbia, where it is said to produce leaves up to 3 inches across (Fig. 34). The white-anthered form, *E. oregonum leucandrum*, a native of low brushy foothills in southern Oregon, is happier with me and bears up to four large flowers on 10-inch stems, and has, with *E. revolutum*, the most strongly-marked leaves.

The third group of mottled-leaved plants is distinguished in the main by the anther filaments, being filiform instead of dilated. Of its three species, *E. californicum*, with creamy-white flowers marked with orange or orange-brown at the base, and again a native of brushy hillsides, is particularly successful with me, bearing three or more blooms on 10-inch stems. In rich soils it may bear up to five flowers. I have a *praecox* form which differs only in flowering at least two weeks before any other species. A near relative, with golden-yellow anthers and a suffusion of yellow spreading from the base up to about one-third of the tepals, is *E. helenae*, for long known as *E. californicum bicolor*. It, like the previous species, is confined to California, particularly in the volcanic crater of Mt. St. Helena. It bears two to four very lovely flowers on 6- to 7-inch stems. It appears to require particularly good drainage in cultivation, i.e. a raised position.

Finally, there is *E. multiscapoideum*, which you may have as *E. hartwegii*, distinguished by the stem branching at the leaves. The flowers are said to be fragrant and open white and, starting at the tips of the tepals, fade to pink, a distinguishing character. It also is a native of brushy hillsides in California and with me bears three flowers on a 9-inch stem. A correspondent in the extinct *Journal of Horticulture* emphasized that it requires a rather dry and sunny position (Fig. 30).

HYBRIDS

Some of the erythroniums hybridize in nature and possibly in the garden. Two hybrids are sometimes in commerce, 'Pink Beauty', which is probably *E. californicum* or *E. oregonum* crossed with *E. revolutum*, and 'White Beauty' (Fig. 32), according to PROFESSOR APPLEGATE probably *E. oregonum* crossed with *citrinum* or, as I think, possibly *E. oregonum leucandrum* with *E. citrinum*. The professor has observed natural hybrids in the *E. grandiflorum* series and at the regions of contact between *E. hendersonii* and *E. oregonum*, *oregonum leucandrum*, *citrinum*, *howellii* and *klamathense*. He refers to the singularly beautiful colour forms combining the contrasting colours of *E. hendersonii* with *E. oregonum* and *E. citrinum*. I have made a few crosses, but the results have yet to be seen; in view of the above I think there is scope for development, particularly of a race which will increase readily by offsets (see the paragraph on propagation, below). It is obvious that the rapidly propagating *E. tuolumnense* should be used, and as it rarely sets seed, crosses are easy as deanthering is unnecessary.

CULTIVATION

All the *E. dens-canis* forms and the eastern-American species are native to woodlands, often on limestone, and therefore require partial shade and a leaf-mould soil well drained, even dry in the summer for the eastern species. To the peculiarities of *E. americanum* I have already referred. Turning to the western species, all that I have were grown in full shade in my Hertfordshire garden in a mixture of the natural gravel, moss peat and leaf-mould. They grew quite well there, although not surprisingly so, with very ordinary attention. When I came to dig them up to move to Porlock I found that most of the corms had gone down to the thin layer of clay about 1 foot down. In that district the rainfall was about 22 inches.

At Porlock, with a rainfall of about 50 inches and usually a mild and wet winter, conditions are very different. Without knowing anything of the ecology of my new garden I planted them under an old pear tree in a mixture of the naturally stony soil and leaf-mould on the north side of the house where there is intermittent shade in the summer but no sun in the winter and early spring. The bed, about 3 inches above ground level, dries out in spring and summer droughts and no watering is done. It is now full of tree roots.

This position has suited *E. dens-canis*, *californicum* and *c. praecox*, *tuolumnense*, *oregonum leucandrum*, *multiscapoideum*, and the hybrids 'Pink Beauty' and 'White Beauty'. I think it is too dry for *E. revolutum*, a native of moist woods, and for *E. oregonum*, which also grows in dense damp woods, and I intend to move these to a moister position. *E. helenae* does not like our wet winters, and although some are still in the original bed, appears to be much happier in partial shade in a position a foot above ground level. *E. hendersonii* did well until last spring, when it disliked intensely the excessive rain and warm mugginess of February

and March. It think it, also, will have to be raised well above ground level to facilitate air drainage. This is supported by the fact that it is native to exposed slopes and glades in yellow-pine woods (*Pinus ponderosa*) in south Oregon and N.W. California. Also, my best plants are on a steep slope in my wood garden. To sum up, depending on the area, a well-drained soil full of leaf-mould in shade or partial shade, and *E. oregonum* and *revolutum* in the damper areas, should give success. For satisfactory results the corms must never be dried off.

PROPAGATION

With the *E. dens-canis* group and the eastern American species, excepting *E. mesachoreum*, this is simple as they all produce plenty of offsets. When we come to the westerners we are faced by the fact that only *E. tuolumnense*, *multiscapoideum* and *helenae* normally increase by offsets or runners. PROFESSOR APPLEGATE states that the tendency to vegetative increase is stimulated by irrigation, which prevents the corm becoming dormant as the ground dries. This, he says, applies particularly to *E. helenae* and *E. hendersonii*, but may do to others. I think I have such increase with *E. citrinum*, *californicum* and × 'White Beauty', but in the presence of self-sown seedlings it is difficult to be sure. An experiment on these lines would be worth while.

All the others, normally, can be increased only by seed, five years being required for the seedlings to reach flowering size. As with most bulbs, the seed should be sown as soon as ripe or soon after, in a mixture of leaf-mould, moss peat and coarse sand and the pots plunged in the open in full or partial shade. At germination it is wise to move the pots to a cold frame and to water regularly until the leaves die down. After that unless in the open they should be watered occasionally as they must not be dried out completely. I prefer not to disturb until the corms are three years old, when they are transferred to boxes or planted out. I have experienced no difficulty in germination except with home-saved seed of *E. hendersonii*, which is often infertile.

It is wise to obtain seed from as many sources as possible as there is considerable variation within the species in different areas.

This concludes a brief survey of the genus and I hope this and the photographs will stimulate others to explore its possibilities both directly and by hybridization.

THE CHAIRMAN: I am sure you would like me to thank MR. ANDERSON for such an interesting talk on these plants. The meeting is now open for discussion.

MR. MCKENZIE: I am afraid I will have to go back some ten or eleven years, for at present it is quite impossible for me to grow them. From my Edinburgh days, I would bear out what MR. ANDERSON has said on one or two species, first of all *E. americanum*. I recall the bed we had in the rock garden before the war, with hundreds of tubers. We decided that it would make a nice feature in our woodland to naturalize them

there. We lifted the bed, but not one survived the move, yet in the original bed the few that we happened to leave tucked into the side of the rock were sufficient to occupy the bed in the course of a few years.

I can bear out what MR. ANDERSON said that deep planting and very moist conditions are essential for *E. americanum*. The position in the woodland to which we moved them was certainly much drier than the position they enjoyed in the rock garden.

We had the good fortune in Edinburgh to have a lot of species which MR. ANDERSON has shown us, including *E. oregonum* and its varieties, which I think is the queen of them all. Our experience with *oregonum*, however, was that it rather enjoyed drier conditions than many others. The plant, I recall, was some 4 feet up on a rock garden which was very well drained. I got it up to some 18 inches in height and it carried one to two flowers, but I can very clearly remember the beauty of that plant. It is a gem.

We found the *E. grandiflorum* set very difficult indeed. They survived rather grudgingly for a period of years, but finally went. *E. montanum* was an absolute failure, although, as MR. ANDERSON has said, they can be seen in pictures in their thousands on the hillside. In Edinburgh, we could not keep them going at all.

Those are my experiences with erythroniums, but as a genus I do not think anyone can grow too many of them given the right conditions. It is a lovely family.

THE CHAIRMAN: MR. THOMAS, have you grown them?

MR. THOMAS: I am afraid I am at a complete loss. I grow *E. dens-canis* quite well. It increases well in sandy soil under trees. Last spring, I was in the late MR. A. T. JOHNSON'S garden in North Wales, and there 'Pink Beauty' and *californicum* was doing fairly well in tacky woodland soil which I would only describe as fairly well drained. The 'Pink Beauty' was spreading over several yards of ground, and likewise *E. californicum*.

MR. WALTER: I used to grow a few, which we got from CARL PURDY, which must have been about twenty years ago—*E. hartwegii*, *howelli*, *hendersonii* and *revolutum* (which was always the white one). I have seen them growing in MR. TH. HOOG'S garden in Haarlem, Holland. I believe he has still quite a good collection which does very well. 'White Beauty', he told me, was a form of *oregonum*. I do not know whether it is a hybrid or not. I also have an elder brother, who is a parson. In the days of his youth he was a missionary in Vancouver Island. He sent me back some pretty little yellow flowers, which I think was *E. grandiflorum*, growing 4 inches high and flowering 3 inches across. That is going considerably further north than PURDY'S hunting grounds in British Columbia. There, he told me, it grew in vast quantities in moist damp woods.

MR. NEWELL: SIR DANIEL HALL was very fond of small bulbs and grew many of the species in his garden at Merton. The soil was very light and they were top dressed with leaf soil each year. Most of the species mentioned by MR. ANDERSON grew exceptionally well in this

light soil. They grow quite well in almost opposite conditions at Bayfordbury although they are not planted in the heaviest clay. The best I have ever seen were growing in MR. DALRYMPLE'S garden near Southampton. Although I did not see them in flower they appeared to have naturalized everywhere in the woodland, where again there was abundant leaf soil. The present owner of the nursery recently sent me seeds which have not yet flowered, but I expect them to be hybrids from the appearance of the foliage on the parent plants.

MR. WALTER: There was a very good form of *E. johnsonii* down there, bulbs of which were sent up to MR. WALLACE. Before he died he still had a few stragglers left. I suppose that it was the true *revolutum*. I also saw, two years ago, a large patch of *revolutum* at Exbury, nearly a couple of yards across, flourishing in high woodland.

A LADY MEMBER: I have had hundreds of the common ones—*dens-canis*—in Essex growing on a dry bank under lime trees. I grew *revolutum* there, too, from some that old MR. COMBER grew. He had some in his private garden and he gave me a few bulbs. I now have them with me in Shropshire and they are increasing very much in a dry place. I thought the soil was heavy, so I put them in a dry place. They flower in April.

A LADY MEMBER: I have a few under a beech tree and I have come to the conclusion that they like to live among the roots of the trees—that is, *dens-canis*.

MR. ANDERSON: *E. dens-canis* grow all over Europe in woodlands. It is one of the best for easy cultivation and rapid increase, and there are a lot of colour forms, too.

THE CHAIRMAN: I have tried to grow a few which I got from CARL PURDY some years ago. *E. tuolumnense* has grown well for many years, and also *E. hendersonii*, on what I call the billiard tables, where it is fairly lime-free. It does well there and the seed has germinated. The only other one that grows well is *E. californicum*, with mottled leaves and white flowers. It has been there for a great number of years. Those are the only ones, but they have never done really well.

MR. WALTER: *E. tuolumnense* has enormous bulbs.

MR. ANDERSON: It has a big corm and also increases very rapidly.

THE CHAIRMAN: It has been an interesting discussion, and particularly interesting was MR. ANDERSON'S work in getting up all the information and telling us how he grows them. It was extremely good of you, MR. ANDERSON, and we are most grateful to you.

(The meeting then terminated.)

LIST OF TALLEST TREES AND LARGEST SPECIMENS OF COMMONER TREES RECORDED SINCE 1947*

A. F. Mitchell
(Forestry Commission)

THE last comprehensive work on largest trees in Britain was the *Report of the Conifer Conference of The Royal Horticultural Society*, published in 1932. At that time the North-West American species, which may reach the greatest sizes here, were reaching one hundred years of age in the case of the oldest, and other species had been here less than eighty years. With twenty-five years' growth and a heavy toll of wind-blow and cutting this is no longer reliable for reference and quotation.

In the course of my work and as a hobby in spare time, I have visited many gardens and arboreta and measured the trees. THE HON. MAYNARD GREVILLE has compiled a large list, particularly of trees of the East of England. We have joined forces to try to make as comprehensive a survey as possible and incidentally to bring up to date the position of the specimens measured in 1931.

Such a list is inevitably out of date as soon as it is published, but this does show the present position and the sort of sizes that various species are attaining in Britain. It also will, I hope, be a challenge, provoking owners and foresters and others to claim even larger specimens which they themselves own or know.

CONIFERS

	Height	Girth†	Year measured	Measurer	Location
Abies alba (Fig. 36)	180′×20′ 6″[1]		1955	A.M.	Kilbryde, Inveraray, Argyll.
	147′×23′ 0″[1]		1956	F.C.	Ardkinglas, Argyll.
Abies concolor	131′× 9′ 5½″[2]		1956	A.M.	Benmore, Argyll.
	128′×11′ 3″		1956	A.M.	Benmore, Argyll.
Abies grandis	168′×12′ 2″		1956	M.G.	Leighton Hall, Welshpool.
	116′×17′ 10″		1955	A.M.	Inveraray, Argyll.
Abies lowiana	145′×14′ 4″		1955	A.M., C.H.	Durris Ho., Kincardine.
	120′×16′ 3″		1956	M.G.	Linton Park, Kent.
Abies magnifica	116′×10′ 3″[2]		1955	A.M.	Blair Atholl, Perth.
	98′×12′ 10″		1955	A.M.	,, ,, ,,
Abies nordmanniana	126′× 8′ 6″		1957	A.M., M.G.	Woodhouse, Uplyme, Devon.
	104′×14′ 1½″		1957	A.M.,P.H.B.G.	Endsleigh, Devon.

* Reprinted with amendments by kind permission of the Forestry Commission and of the Editor from the *Quarterly Journal of Forestry* of the Royal Forestry Society of England and Wales. Vol. LI No. 4 for October, 1957.

† Girths given under the initials A.M., J.R., C.M., and F.C. are all measured at 4′ 3″, girths by M.G. and P.H.B.G. at 5′. The difference between girths of the same tree at these two heights is found to vary for good smooth boled trees from 0–1½″. For rough-barked or quickly tapering trees the difference may be 3″, but with such trees the girth cannot be given definitively to within less than 3″ owing to choices of the path of the tape.

CONIFERS—*continued*

	Height	Girth	Year measured	Measurer	Location
Abies pinsapo	98′ ×	6′ 0″	1951	M.G.	Panshanger, Herts.
	87′ ×	13′ 9″	1950	M.G.	Scotney Castle, Kent.
Abies procera	148′ ×	11′ 0″	1952	C.M., J.R.	Duncraig Castle, W. Ross.
	114′ ×	14′ 9½″	1957	A.M., R.W.	Melbury, Dorset
Abies veitchii	78′ ×	4′ 7½″	1957	A.M., R.W.	Bowood, Wilts.
	68′ ×	7′ 8″	1957	A.M., C.H.	Eridge Castle, Sussex.
Araucaria araucana	87′ ×	10′ 6″	1957	M.G.	Bicton, Devon.
	82′ ×	12′ 4″	1957	A.M., R.W.	,, ,,
Cedrus atlantica	132′ ×	18′ 5″	1957	A.M., M.G.	Bowood, Wilts.
	119′ ×	19′ 1″	1954	A.M., C.H.	Eastnor Cas., Hereford.
Cedrus atlantica glauca	126′ ×	13′ 2″	1952	M.G.	Pampisford, Cambs.
	105′ ×	16′ 1″	1957	A.M., R.W.	Bowood, Wilts.
Cedrus deodara	117′ ×	12′ 10″	1957	A.M., R.W.	Stourhead, Wilts.
	105′ ×	17′ 8″	1957	A.M., R.W.	Bicton, Devon.
Cedrus libani	129′ ×	18′ 5″	1957	A.M., R.W.	Bowood, Wilts.
	66′ ×	34′ 9″	1954	M.G.	Cedar Park, Cheshunt, Herts.
Chamaecyparis lawsoniana	116′ ×	9′ 2″	1957	A.M., P.H.B.G.	Endsleigh, Devon.
Chamaecyparis lawsoniana erecta	84′ ×	12′ 1″	1957	A.M., R.W.	Bowood, Wilts.
Chamaecyparis nootkatensis	95′ ×	9′ 0″	1957	A.M., J.S.	Eridge Castle, Sussex.
	73′ ×	9′ 1″	1957	A.M.	Moncrieffe Ho., Perthshire.
Chamaecyparis obtusa	71′ ×	7′ 2″	1957	A.M., R.W.	Bicton, Devon.
Chamaecyparis pisifera	74′ ×	3′ 4″	1957	A.M., R.W.	,, ,,
	62′ ×	7′ 0″	1957	A.M., R.W.	Stourhead, Wilts.
Chamaecyparis pisifera plumosa	77′ ×	7′ 0″	1957	A.M., R.W.	Bicton, Devon.
Chamaecyparis pisifera squarrosa	87′ ×	5′ 1″	1957	A.M., R.W.	,, ,,
Cryptomeria japonica	117′ ×	8′ 8½″	1957	A.M., M.G.	Woodhouse, Devon.
	90′ ×	16′ 5″	1957	A.M., P.H.B.G.	Boconnoc, Cornwall.
Cunninghamia lanceolata	107′ ×	7′ 7″	1957	A.M., R.W.	Bicton, Devon.
Cupressocyparis leylandii	67′ ×	6′ 4″	1955	A.M., A.J.W.	Inveraray, Argyll.
Cupressus lusitanica	84′ ×	13′ 10″	1957	A.M., R.W.	Bicton, Devon.
Cupressus lusitanica benthami	89′ ×	9′ 2½″	1957	A.M., R.W.	,, ,,
Cupressus macrocarpa	126′ ×	6′ 9″	1952	M.G.	Pampisford, Cambs.
	98′ ×	27′ 0″	1957	A.M., M.G.	Strete Ralegh, Devon.
Ginkgo biloba	90′ ×	7′ 7″	1956	M.G.	Linton Park, Kent.
	70′ ×	12′ 8″	1956	A.M.	Kew R.B.G., Surrey.
Larix decidua	145′ ×	8′ 10″	1955	A.M., P.H.B.G.	Parkhatch, Surrey.
	102′ ×	18′ 3″	1953	J.R., C.M.	Monzie, Perth.
Larix eurolepis	97′ ×	3′ 7″	1955	A.M.	Blair Atholl, Perth.
	78′ ×	7′ 2″	1956	A.M., P.H.B.G.	,, ,, ,,
Larix laricina	65′ ×	3′ 8″	1957	A.M., P.H.B.G.	Borde Hill, Sussex.
Larix leptolepis	105′ ×	8′ 2″	1955	A.M.	Blair Atholl, Perth.
	98′ ×	8′ 6″	1955	A.M.	Dunkeld Ho., Perth.
Larix occidentalis	70′ ×	3′ 11½″	1956	A.M.	Kew R.B.G., Surrey.
	64′ ×	4′ 5″	1956	A.M.	,, ,, ,,
Larix pendula	82′ ×	4′ 3½″	1957	A.M., R.W.	Warnham Ct., Sussex.
Libocedrus decurrens	111′ ×	10′ 2½″	1957	A.M., R.W.	Broxwood Court, Hereford.
Picea abies	156′ ×	14′ 2″	1952	M.G.	Studley Royal, Yorks.
Picea bicolor	87′ ×	7′ 4″	1957	A.M., R.W.	Bicton, Devon.
Picea jezoensis	102′ ×	7′ 8″	1957	A.M., P.H.B.G.	Tregrehan, Cornwall.
	90′ ×	9′ 10″	1956	A.M.	Benmore, Argyll.
Picea omorika	83′ ×	4′ 9″	1957	A.M., P.H.B.G.	Tregrehan, Cornwall.
Picea orientalis	110′ ×	9′ 6″	1957	A.M., R.W.	Stourhead, Wilts.
	98′ ×	11′ 7″	1957	A.M., R.W.	Broxwood Court, Hereford.
Picea polita	73′ ×	9′ 1″	1957	A.M., P.H.B.G.	Pencarrow, Cornwall.

CONIFERS—*continued*

	Height	Girth	Year measured	Measurer	Location
Picea sitchensis	160′	15′ 2″	1954	A.M., J.D.M.	Murthly Cas., Perth.
	160′	12′ 6″	1956	A.M.	Inveraray, Argyll.
Picea smithiana	115′	25′ 0″	1956	A.W.	Filleigh Est., Devon.
	135′	9′ 8″	1957	A.M.	Woodhouse, Devon.
	110′	12′ 4″	1957	A.M., R.W.	Melbury, Dorset.
	80′	18′ 4″[4]	1957	A.M., R.W.	Bicton, Devon.
Pinus contorta	105′	11′ 4″	1957	A.M., R.W.	,, ,,
	102′	12′ 4″	1949	J.B.	Monk Hopton, Salop.
Pinus griffithii	105′	6′ 7″	1952	M.G.	Pampisford, Cambs.
	100′	10′ 9″	1950	M.G.	Warwick Castle.
Pinus jeffreyi	99′	7′ 2″	1956	A.M., M.G.	Westonbirt, Glos.
	97′	10′ 9″	1956	J.R., C.M.	Dropmore, Bucks.
Pinus nigra austriaca	137′	12′ 8″	1955	M.G.	Ickworth, Suffolk.
Pinus nigra calabrica	135′	10′ 4″	1950	J.B.	Stanage Pk., Radnor.
	121′	13′ 8″	1956	J.R., C.M.	Dropmore, Bucks.
Pinus pinaster	100′	9′ 11″	1957	A.M., R.W.	Foxley, Hereford.
Pinus ponderosa	118′	13′ 0″	1957	A.M., M.G.	Bowood, Wilts.
Pinus radiata	138′	11′ 11″	1955	P.H.B.G.	Cuffnells, Hants.
	105′	22′ 1″	1957	M.G.	Bicton, Devon.
Pinus strobus	120′	7′ 7½″	1957	A.M.	Chatsworth, Derby.
	102′	16′ 5″[3]	1955	A.M., M.G.	Stratfield Saye.
Pinus sylvestris	120′	10′ 0″	1952	M.G.	Necton Pk., Norfolk.
	70′	18′ 0″	1953	C.F.	Spye Pk., Wilts.
Pseudotsuga taxifolia (Fig. 35)	181′	13′ 4″[6]	1956	P.A.H.	Powis Cas., Montgomery.
	110′	20′ 0″	1956	A.M.	Dunkeld Ho., Perth.
Sequoiadendron giganteum (Fig. 37)	165′	24′ 0″[3]	1955	P.H.B.G.	Fonthill Abbey, Wilts.
	162′	19′ 6″	1957	A.M.,P.H.B.G.	Endsleigh, Devon.
	105′	28′ 6″	1954	per R.C.B.G.	Crichel Ho., Dorset.
Sequoia sempervirens	138′	14′ 10″	1954	A.M., P.A.H.	Leaton Knolls, Salop.
	110′	21′ 1″	1957	A.M., A.S.G.	Taymouth Cas., Perth.
Taxodium distichum	*ca.* 95′	16′ 8″	1947	P.H.B.G.	Burwood Pk., Surrey.
Taxus baccata	92′		1955	F.C.	Cowdray Pk., Surrey.
		×34′ 7″	1941	R.C.B.G.	Ulcombe, Kent.
Thuja plicata	129′	17′ 10″	1957	A.M., R.W.	Bicton, Devon.
Thujopsis dolabrata	63′	4′ 5½″	1957	A.M., R.W.	Melbury, Dorset.
Tsuga canadensis	114′	8′ 2″	1954	M.G.	Hardwicke, Suffolk.
	90′	16′ 4″	1952	M.G.	Studley Royal, Yorks.
Tsuga heterophylla	146′	10′ 6″	1956	A.M.	Benmore, Argyll.
	120′	13′ 8″	1955	A.M.	Kinloch Ho., Angus.
Tsuga mertensiana	88′	6′ 11″	1955	A.M.	Murthly Cas., Perth.
	83′	9′ 7″	1955	A.M.	,, ,, ,,

DECIDUOUS AND OTHER EVERGREEN TREES

	Height	Girth	Year measured	Measurer	Location
Acer campestre	86′		1953	M.G.	Cobham Hall, Kent.
	70′	12′ 8″	1950	M.G.	Pampisford, Cambs.
Acer platanoides	81′	9′ 2″	1950	M.G.	,, ,,
Acer pseudoplatanus	117′	31′ 10″	1955	M.G. (Coppice	Coxwold, Yorks.
	117′	19′ 2″	1953	M.G. stem)	Cobham Hall, Kent.
	85′	22′ 3″	1955	A.M.	Birnam, Perthshire.
Aesculus hippocastanum	107′	16′ 0″	1954	M.G.	Stanstead Bury, Herts.
	96′	20′ 10″	1950	M.G.	Hatfield Forest, Essex.
Alnus glutinosa	70′	11′ 10″	1953	M.G.	Fairlawne, Tonbridge, Kent.
Betula verrucosa	102′	7′ 5″	1956	J.R., C.M.	Woburn, Beds.
	58′	11′ 7″	1956	M.G.	Worlingham Hall, Suffolk.
Carpinus betulus	105′	7′ 3″	1954	A.M.	Durdans, Epsom.
	50′	17′ 7″	1950	M.G.	Hatfield Forest, Essex.

DECIDUOUS AND OTHER EVERGREEN TREES—*continued*

	Height	Girth	Year measured	Measurer	Location
Castanea sativa	114′	× 12′ 11″	1954	F.C.	Cowdray Pk., Sussex.
		× 40′ 9″	1950	P.H.B.G.	Canford, Dorset.
Fagus sylvatica	142′	× 8′ 9″	1954	C.M., A.M.	Yester Ho., E. Lothian.
	95′	× 25′ 3″	1956	A.M., C.H.	Conon Ho., Dingwall, Ross
Fagus sylvatica var. *atropunicea*	100′	× 21′ 9″	1956	M.G.	Linton Pk., Kent.
Fraxinus excelsior	148′	× 10′ 6″	1956	A.M., M.G.	Duncombe Pk., Yorks.
	90′	× 19′ 6″	1952	M.G.	Holywell Hall, Stamford, Lincs.
Juglans nigra	105′	× 14′ 0″	1952	M.G.	Hatfield Forest, Essex.
(Fig. 38)	90′	× 16′ 3″	1951	M.G.	Syon Ho., Middlesex.
Juglans regia	82′	× 17′ 8″	1957	A.M., R.W.	Laverstoke Pk., nr. Basingstoke, Hants.
(Fig. 39)	77′	× 10′ 8″	1955	M.G.	Middle Woodford, Wilts.
	60′	× 21′ 6″	1955	M.G.	Pilton Churchyard, Northants.
Liquidambar styraciflua	90′	× 8′ 5″	1951	M.G.	Syon Ho., Middlesex.
Liriodendron tulipifera	110′	× 22′ 2″	1953	M.G.	Killerton, Devon.
Nothofagus obliqua	79′	× 5′ 4″	1951	M.G.	Kew R.B.G., Surrey.
	75′	× 7′ 4″	1954	A.M.	Grayswood Hill, Surrey.
Nothofagus procera	74′	× 5′ 11″	1955	A.M., C.M.	Muncaster Cas., Cumb. (pl. 1923).
Plantanus acerifolia	132′	× 21′ 11″	1957	M.G.	Carshalton, Surrey.
	114′	× 26′ 4½″	1950	M.G.	Bishop's Palace, Ely, Cambs.
Platanus orientalis	108′	× 17′ 5″	1956	M.G.	Petersham Lodge, Surrey.
	66′	× 22′ 10″	1956	M.G.	Hawstead Old Place, Suff.
Populus alba	100′	× 8′ 1″	1957	A.M., M.G.	Stourhead, Wilts.
	75′	× 10′ 8″	1954	M.G.	Moynes Pk., Essex.
Populus canescens	110′	× 11′ 5″	1950	M.G.	Saling Grove, Essex.
	100′	× 17′ 4″	1951	M.G.	Castle Hedingham, Essex.
Populus eugenii	126′	× 10′ 1″	1956	M.G.	Kew R.B.G., Surrey.
Populus nigra	140′	× 20′ 2″	1953	M.G.	Fairlawne, Tonbridge, Kent.
		× 26′ 9″	1949	P.H.B.G.	Shalford, Surrey.
Populus nigra var. *italica*	108′	× 7′ 5″	1954	M.G.	Golders Hill Pk., London.
		× 14′ 8″	1946	P.H.B.G.	Upper Edgbold, Salop.
Populus serotina	*ca.* 100′	× 12′ 3″	1957	A.M.,P.H.B.G.	Wakehurst Pl., Sussex.
Prunus avium	102′	× 8′ 4″	1956	J.R., C.M.	Woburn, Beds.
	70′	× 10′ 8″	1952	M.G.	Lexden Manor, Colchester, Essex.
Quercus borealis	102′	× 14′ 1″	1957	A.M., R.W.	Melbury, Dorset.
Quercus cerris	105′	× 15′ 0″	1954	M.G.	Arnos Pk., London.
		× 22′ 0″	1956	J.D.U.W.	Mamhead Pk., Devon.
Quercus ilex	70′	× 21′ 0″?	1952	M.G.	Chiswick Ho., London.
Quercus lucombeana	126′	× 11′ 7″	1957	M.G.	Cowley Place, Devon.
	72′	× 21′ 9″	1956	M.G.	Worlingham Hall, Suffolk.
Quercus pedunculata	128′	× 14′ 10″	1954	J.R., C.M.	Marchmount, Berwick.
	64′	× 25′ 4″	1953	M.G.	Nedging Hall, Suffolk.
(Pollard)	40′	× 39′ 9″	1955	M.G.	Bowthorp, Lincs.
Robinia pseudoacacia	99′	× 9′ 2″	1957	M.G.	Bowood, Wilts.
	54′	× 16′ 2″	1957	M.G.	Greycourt School, Surrey.
Salix alba	81′	× 11′ 3″	1955	M.G.	Grovelands Pk., London.
Tilia cordata	105′	× 15′ 7″	1950	M.G.	Thurlow Pk., Suffolk.
Tilia vulgaris	152′	× 11′ 2″	1956	A.M.	Duncombe Park, Yorks.
	90′	× 37′ 10″	1953	M.G.	Cobham Hall, Kent.
Ulmus carpinifolia	141′	× 21′ 8″	1956	M.G.	Easton Ho., Dunmow, Essex.
	90′	× 24′ 0″	1953	M.G.	Great Waltham, Essex.
Ulmus glabra	138′	× 15′ 5″	1952	M.G.	Earl Soham, Cambs.
		× 25′ 0″	1944	P.H.B.G.	Monks Eleigh, Cambs.

DECIDUOUS AND OTHER EVERGREEN TREES—*continued*

	Height	Girth	Year measured	Measurer	Location
Ulmus procera	141′	× 17′ 3″	1951	M.G.	Syon Ho., Middlesex.
		× 25′ 6″	1941	P.H.B.G.	Kelston, Somerset.
Ulmus stricta	115′	× 10′ 11″	1957	A.M., R.W.	Roadside, nr. Romsey, Hants.
	90′	× 11′ 1″	1950	M.G.	The Hyde, Ingatestone, Essex.
Zelkova carpinifolia	123′	× 9′ 3″	1951	M.G.	Syon Ho., Middlesex.
	94′	× 21′ 3½″	1956	M.G.	Worlingham, Suffolk.

[1] Very difficult to measure. Theodolite measurement gave 186′. From various angles hypsometers give 175–180. About six tops to tree, and standing on a steep bank.
[2] Dying back or unhealthy.
[3] Girth at 1 foot, owing to branches, but tree a single stem, not forked low down.
[4] Dead. Girth at 1′ 6″ but not forked. Included for comparison with next largest.
[5] Girth round single stem, but across scars where large branches pruned off.
[6] Climbed and taped.
[7] At 0′. Allowed in this case as no other nearly so large.

A.S.G.	A. Gardiner, F.C. Research.	J.D.M.	J. D. Matthews, F.C. Research.
A.J.W.	A. J. Waller, F.C. Research.	J.D.U.W.	J. D. U. Ward, Watchet, in litt.
A.M.	The Author, F.C. Research.	J.R.	Miss J. Rose, F.C. Research.
A.W.	A. Wilson, Filleigh Estate.	J.S.	J. Small, Eridge Estate.
C.F.	C. Floyd, in *Q.J.F.*	M.G.	The Hon. Maynard Greville.
C.H.	C. H. R. Hillman, F.C. Research.	P.A.H.	P. A. Hutt, Leaton Knolls Est.
C.M.	C. Maclean, F.C. Research.	P.H.B.G.	P. H. B. Gardner, in *Q.J.F.*
E.N.	E. Nimmo, Poole, Dorset, in litt.	Q.J.F.	*Quarterly Journal of Forestry.*
F.C.	Forestry Commission, Mensuration, etc.	R.C.B.G.	R. C. B. Gardner in *Q.J.F.*
J.B.	J. Benson, in *Q.J.F.*	R.W.	R. Worsley, F.C. Research.

HARDY FERNS—III

ADIANTUM (MAIDENHAIR)

Gerald Perry

"The rill runs o'er, and, round
ferns, flowers, and ivy creeps
Fantastically tangled."

(*Old Herbal.*)

THE graceful habit and pleasing colour tones of the Maidenhair make it perhaps the most popular kind in cultivation. It is familiar even to those with scant knowledge of ferns of any description.

The genus is extensive. SIR WM. HOOKER in his monumental work *Species filicum* describes well over 100 species, and mentions that the headquarters of the genus is in Tropical America. He also states that the species are distinguished from other ferns by the texture and one-sidedness of their segments. From this Western headquarters in Central America the genus extends over the temperate and tropical regions of both the Old and New Worlds, many being of very extensive distribution, e.g. the European *A. capillus-veneris*, our common Maidenhair. This plant with its elegantly divided fronds and slender ebonous stems in many ways is typical of all the species.

This group may also include the beautiful *A. tenerum farleyense*, a plant which MOORE described as "one of the most graceful species yet known of perhaps the most lovely genus of the pre-eminently lovely family of ferns". The original occurred during the mid 1800's, in the garden of MR. T. G. BRIGGS, of Barbados, who commemorated the name of his house "Farley Hill", in the title of the plant.

A well-grown specimen of this fern is always an object of admiration. The fronds are gracefully pendant, delicately pink when young but turning to a bright light green when mature.

All the Maidenhairs can be distinguished by the peculiar position of the spore cases (sori) and their bleached and veiny appearance. These receptacles are situated on the underside margins of the leaflet (or pinnule) in a fertile frond and are formed by a reflexing of the lobe apex, which changes in texture to a thin veined membrane. Thus the spore cases are turned upside down on the under surface of the frond. In the barren fronds the terminal lobes are not reflexed, but continue forward, presenting a shapely cut or serrated appearance. This contrasts markedly with the rounded outlines of the fertile fronds.

Adiantum capillus-veneris

The native Maidenhair is quite unlike any other British fern and there is no other plant with which it can be confounded.

The shining slender stems, either black or dark chestnut and entirely devoid of hairs or scales, the thread-like branchlets and the more or less fan-shaped pinnules distinguish it from any other species. The fronds, which are of perennial duration, are freely produced from a slowly creeping rootstock which is black and scaly. These fronds grow from a foot to a foot and a half in height and are bright green in colour.

Another characteristic is that every leaflet or pinnule is pencilled with closely forked veins which radiate from the base, each vein remaining distinct from its neighbours and not forming a network.

A. capillus-veneris has produced more varieties than any other species with the possible exception of the South American *A. cuneatum*. The former has a very wide geographical distribution, growing in profusion in some parts of the world, and yet it is scarce in this country. Despite the fact that *A. capillus-veneris* is rarely found wild in Britain the majority of recorded varieties have occurred either in the wild or arisen by chance in cultivation in this country.

The distribution appears to have been more plentiful years ago, for KEOGH writing of the plant in his *Botanologia Universalis Hibernica* (1735) states, "The best in this Kingdom is brought from the rocky mountains of Burren, in the county of Clare, where it grows plentifully, from hence it is brought in sacks to Dublin, and sold there". He also stated that its economic uses were both numerous and varied, ". . . it is pulmonic, lithontriptic . . . and wonderfully helps those afflicted with asthma, shortness of breath, and coughs . . . it is good against jaundice, dropsy, and the bitings of mad dogs". According to other

writings this fern was exported in large quantities to London during the 1700's; at that time it was known as *dubh-chosach*, or "black footed".

Despite these virtues, the plant does not hold a place of honour in *The Extra Pharmacopoeia* of MARTINDALE and WESTCOTT. JOHN RAY in his *Historia Plantarum* remarks that if all these virtues existed in the Maidenhair it might indeed be looked upon as a panacea for every disease. He goes on however to propose a drink from it, which he suggests might be efficaciously employed in fevers and similar cases. For this about three handfuls of the recently collected leaves should be placed in warm or gently boiling water, and allowed to remain overnight. He mentions that a strong decoction will act as an emetic and also records that in France the growth of Maidenhair about the wells is looked upon as a sure sign of the purity and sweetness of the water.

MRS. CHANTER in *Ferny Combes* tells of a German legend connected with Maidenhair, although she does not mention the location. Apparently, a lady was keeping tryst with her lover, when he was suddenly, after the fashion of Germany in those days, transformed into a wolf. The lady fled before him, and in her haste fell over a precipice, her black hair tangling in the bushes as she descended. On the spot where she fell, a clear spring welled up, and round about her hair took root. The well is called "The Wolf's Spring" and the little custodian of the glen after telling you the story, hands over a bunch of the Maiden's Hair.

The plant was formerly employed in France for the making of a syrup known as *capillaire*. This was supposed to possess pectoral qualities and was prepared by adding sugar and orange-flower water to an infusion of the fern.

Although *A. capillus-veneris* has a wide and varied geographical distribution, in the British Isles this is distinctly confined to the west, where it affects low sea caves and clefts in the rocks. It was formerly abundant in Cornwall and Devon, the Welsh Coast and Ireland, but of late years has become very scarce. In Europe the plant is dispersed over the central and southern regions. I have found large colonies on the rocky cliffs of Portugal growing in luxuriance within reach of the sea spray. I also have a plant in my garden which was chipped away from the brickwork of ancient Pompeii. It abounds in Sicily and extends along the Mediterranean coast to Turkey and Greece, and also occurs in Central America and Mexico and the damp hilly districts of India.

In the Canaries, where it is exceedingly common, it was formerly employed by the inhabitants for the decoration of their porous vases. According to BRITTEN, these vases were used for the purpose of cooling the drinking water, presenting a very beautiful appearance. So readily is the fern established in this situation that the inhabitants, wishing to encourage its growth upon new vases, found it sufficient to rub them over with the mature spore-bearing fronds, after which young plants were not long in making appearance.

Although this distinctive plant is to be found growing wild in a few favoured places in the west of the British Isles it must never be regarded as a truly hardy subject. Under cultivation it requires the protection of glass during the winter months or it will make a very desirable pot plant for the greenhouse if planted in a mixture of peat, silver sand and loam.

Adiantum pedatum

The North American Maidenhair, *Adiantum pedatum*, is probably the most graceful of all hardy ferns and much hardier than *A. capillus-veneris*.

The young fronds, which are a delicate light green, appear very early in the spring and in cold districts or windy positions are not infrequently cut by late spring frosts. New fronds however soon replace the damaged ones and the plant will be in full character by mid-June. As a pot plant *A. pedatum* makes a very desirable specimen for a cold greenhouse. It shows a marked dislike however for a warm house and if so placed will soon become infested with thrips.

For the rest, a site away from the strong rays of the sun and protected from the cold spring winds, a cool retentive soil and an occasional top dressing of peat or screened leaf are its modest demands in life. Guard always against drought, especially during the dormant period. The normal growth height is 12–18 inches, but this may vary under cultural conditions.

There is a variety called 'Klondyke', which was collected by the late LADY DE BATHE during her North American tour and bears the name of the locality of her discovery. This variety is even more beautiful than the type and will grow under favourable conditions to a height of 2 feet. Another form from Japan, called *japonicum*, is distinguished by rosy fronds in the spring of the year, a characteristic which gives it great charm.

A. pedatum and its varieties produce from a slowly creeping root-stock, thin, wiry, dark chestnut brown stems which are dichotomously forked and support the heads of fan-shaped pinnules.

The plant remains in constant character throughout the summer and early autumn months and after the early frosts the foliage and stems assume a dark russet brown colouration and remain in this condition throughout the winter months. This protecting mantle should be retained until the new growth commences in the spring.

A. pedatum was one of the earliest foreign plants to be introduced to England, being collected by JOHN TRADESCANT in Virginia. BROWN writing in the *Genesis of the United States* says: "In 1637 he (TRADESCANT) was in Virginia gathering all varieties of flowers, plants, shells, etc., for the collection (of CHARLES II) at Lambert." It was a discovery of this time that perpetuated his name by the introduction of *Tradescantia virginica*.

There is in existence an old herbarium specimen, stated to have been collected in 1769 in the Cherokee Country, and it is also recorded

Photo, J. E. Downward

FIG. 29—*Viburnum betulifolium* **F.C.C.** September 24, 1957, exhibited by SIR FREDERICK STERN, O.B.E., M.C., V.M.H. (see p. 131)

THE GENUS *ERYTHRONIUM*

FIG. 30—*Erythronium multiscapoideum* reproduced from *Curtis's Botanical Magazine*, Vol. 124, t. 7582 (slightly reduced) (see p. 106)

THE GENUS *ERYTHRONIUM*

FIG. 3.—*Erythronium hendersonii* reproduced from *Curtis's Botanical Magazine*, Vol. 114, t. 7017 (slightly reduced) (see p. 196)

THE GENUS *ERYTHRONIUM*

FIG. 32—Erythronium 'White Beauty' (see p. 107)

Photos, J. E. Downward

FIG. 33—*Erythronium tuolumnense* (see p. 105)

THE GENUS *ERYTHRONIUM*

FIG. 34—*Erythronium oregonum* growing in Victoria, Canada, before the plant had been thinned out by picking. Photograph reproduced by courtesy of the Director, from the collections of The Herbarium, Royal Botanic Gardens, Kew (see p. 106)

Photos, R. C. B. Gardner

SPECIMENS OF TALLEST TREES

FIG. 35—Douglas fir *Pseudotsuga taxifolia*, 181 ft. tall and 13 ft. 4 in. girth, growing in the grounds at

FIG. 36—Silver fir *Abies alba*, 180 ft. tall and 20 ft. 6 in. girth, at Kilbryde, Argyllshire (see p. 111)

FIG. 35—Douglas fir *Pseudotsuga taxifolia*, 181 ft. tall and 13 ft. 4 in. girth, growing in the grounds at

FIG. 36—Silver fir *Abies alba*, 180 ft. tall and 20 ft. 6 in. girth, at Kilbryde, Argyllshire (see p. 111)

Photos, P. H. B. Gardner

SPECIMENS OF TALLEST TREES

FIG. 37—*Sequoiadendron giganteum*, 165 ft. tall and 24 ft. girth, in the Fonthill Abbey Woods, Wiltshire (see p. 113). This is almost certainly the same tree that was measured for *The Trees of Great Britain and Ireland*, by H. J. ELWES and A. HENRY. It was grown from seed sent in 1861 and in 1906 was recorded as "probably 105 ft. high by 17 ft. in girth". It was described then as "the largest and finest tree I have measured"

FIG. 38—Black walnut, *Juglans nigra*, 90 ft. tall, at Syon House, Middlesex (see p. 114). The girth at 5 ft. is now 16 ft. 5 in. When measured in 1949 it was 15 ft. 10 in. at the same height, so that the tree has grown 7 in. in girth in the past eight years

Photo, P. H. B. Gardner

SPECIMENS OF TALLEST TREES

FIG. 39—Common walnut, *Juglans regia*, 60 ft. tall and 21 ft. 6 in. girth, at Pilton Churchyard, Northamptonshire (see p. 114)

FIG. 40—Cassiope 'Edinburgh' **A.M.** April 30, 1957. A hybrid between *C. fastigiata* and *C. tetragona* shown by the Royal Botanic Garden, Edinburgh (see p. 132)

that the old Indian name was Outoanaka, which, briefly translated, means "Blackstem".

This graceful fern has a wide geographical distribution. BRITTEN and BROWN in their monograph of North American plants record that the range is from Nova Scotia to British Columbia, south to Georgia and Arkansas, with wide and frequent stations in the Rocky Mountains, and ascending to 5,000 feet in the state of Virginia where TRADESCANT first discovered the plant.

Adiantum venustum

The earliest recording of this plant that I have been able to discover, is a reference made by R. H. BEDDOME in *The Ferns of British India*, published in 1865. This was followed a few years later by a concise botanical description by SIR WM. HOOKER and J. G. BAKER in their synopsis of "All Known Ferns" (*Synopsis filicum*). HOOKER at the time was Director of the Royal Botanic Gardens, Kew, and had been working on ferns for upwards of half a century, spending more than half that period on the completion of this book.

At first confusion arose between *A. venustum* and *A. monochlamys*, a species discovered in Japan by CAPTAIN ROGERS and CAPTAIN RINGGOLD of the American Exploring Expedition to that country.

At this time steam transport was developing and the world was opening up, a circumstance exploited by HOOKER who had well over 100 collectors in different parts of the world sending home specimens. These included such famous names as TOLMIE, DOUGLAS, ASA GRAY and the two VOGELS. From the mass of material he received he was able to form the richest herbarium in the world and the specimens enabled him (together with other collector's material) to describe and classify the whole Order and compile his work of over 450 closely packed pages. I think it quite probable therefore that HOOKER never had the opportunity of seeing a living plant of *A. venustum* but had to work entirely from the herbarium specimens sent home to BEDDOME.

Searching through old catalogues I have been able to find only one or two brief mentions of this plant and then always under the heading of "Stove Ferns". It was never regarded as a hardy or half-hardy plant until the 1920's.

The late CAPTAIN G. H. SIMPSON-HAYWARD, former Worcestershire all-round cricketer, and one of the few players who achieved success in this first-class game with underarm bowling, was a keen gardener and a recognized authority on entomology and lepidoptera. His garden at Icombe Place, Stow-on-the-Wold, was an indication of his skill and interest in horticulture. He was also widely known as an authority on alpine plants and his rock gardens were amongst the finest in the country, and it was in a sheltered position in this alpine garden that *A. venustum* first enjoyed an outdoor life in this country. Doubtless from that lone specimen all other plants in cultivation today must have originated.

In 1909 SIMPSON-HAYWARD was in India on an International Cricket

tour which, after a successful conclusion, left him time to devote a period to his favourite pastime of plant hunting.

DR. F. W. STANSFIELD of the British Pteridological Society, writing in the *Gazette* in 1924 stated, "We received last autumn from CAPT. SIMPSON-HAYWARD, a plant of an *Adiantum* which he collected in Kashmir, and which has proved quite hardy in mid-Gloucestershire for the past fifteen years. It has been grown both in a cold house and also in the open air, on rockwork, without any protection except such as is afforded by the overhanging rocks. . . . About the end of January it began to make new growth, although all the British ferns were perfectly dormant. It has continued to grow slowly all through February in spite of the persistently cold weather with hard frosts almost every night. The new fronds are now (March 10th) one or two inches high, of a beautiful crimson colour, and look perfectly fresh and healthy. . . . It is obviously much hardier than *A. capellus-veneris* and probably almost as hardy as *A. pedatum*, although an evergreen species. It is an elegant fern with wiry stems like *A. cuneatum*, but with rounder pinnules and with the rhizomatous habit of *A. capellus-veneris*."

Probably the finest specimen in the country today is in the garden of MR. W. P. KING, of Watford, as portrayed in the photograph (JOURNAL, Vol. 80, Fig. 31).

To use MR. KING's own words when describing his plant, ". . . it has ignored my neglect and misfeasance for some twenty-five years. It now measures 7 feet by 6 feet notwithstanding inroads on its perimeter for admiring friends. During the past twenty-five years it has been baked, frozen, buried in snow and raked by tempest. It grows in a soil with the drainage of a sieve, and, at times, the aridity of the Sahara. Two large trees which gave it some shade had to be removed a few years ago and for the greater part of the day since, it has had to put up with the full strength of any sunshine available.

"It is never watered, top-dressed or protected in any way, but it has never shown any yearning for the cool twilight of the dripping grotto said to be essential for its survival. . . ."

Following these remarks, which appeared in this JOURNAL (Vol. 80), March 1955, a correspondent of *The Times* writing about this fern stated:

"But caution and conservation in the growing of the type of Maidenhair Fern is difficult to overcome. MR. CHARLES H. CURTIS of Brentford has told the R.H.S. how 'By word of mouth, by writing and by ocular demonstration' he has for years been trying to persuade gardening friends that the Maidenhair Fern is hardy in the South of England. He has met with no success. Now he hopes that wider public acquaintance with the show of MR. KING's fern will induce people to grow it boldly in the open. . . ."

NOTES FROM FELLOWS

The Hardy Arum 'Lily'

THE excellent photograph of the florist's arum "lily" by MR. T. C. CLARE in the November JOURNAL, 1957, and his accompanying note will no doubt induce many growers of this popular greenhouse plant to try it in their ponds as he suggests. I well remember seeing it happily established as an outdoor plant in the stream at the foot of Dunster Castle in 1938. It would be interesting to know if the clumps are still thriving.

This plant is so splendid and brings such quality to the garden with its magnificent leaves and noble flowers that those who have no pond or greenhouse, nor suitable winter shelter in their gardens, will be as surprised as I was to hear that there is a completely hardy form, identical in every respect, which can be grown *in the open border* and does not require marsh conditions.

Some years ago I was very kindly given a plant of this by MRS. GWENDOLINE ANLEY of Woking and my plant has been growing in the open, but near a wall, and flowering well ever since, reaching 3 feet in height. The first time I had to give it water was in June this year, towards the end of the heat-wave. MRS. ANLEY received her plants from THE EARL OF MORTON in 1948 and a photograph of them appeared in the JOURNAL for February 1956.

This year her row of plants had one hundred and twenty-five flowers. Our three gardens are on light sandy soil.

LORD MORTON tells me he obtained the original plants from a gardener at Crowborough, Sussex; when I visited the garden this summer I was delighted to find that the plants there have survived the changes of ownership over the years and are still growing well in heavy soil, 500 feet above sea-level. It is also thriving in another Sussex garden, also fully exposed. We therefore feel that this plant is reliably hardy in the south of England and as the Woking district is notorious for its severe weather this speaks well for the probable success of this plant over the British Isles.

Although we have searched, we have not been able to find any mention in horticultural literature of a hardy form of *Zantedeschia aethiopica* (*Richardia africana*) and therefore we propose calling this plant 'Crowborough'. There is a long article in *The Flora and Sylva*, 1905, signed "B.", in which several varieties are mentioned which do not fit our plant, nor is a hardy form recorded. It would seem that this may be a geographical variant from a dry area and it would be helpful if any Fellow could shed any light on this matter.

GRAHAM S. THOMAS

Woking,
Surrey.

A Pink Meconopsis from Nepal

Meconopsis plants from seed collected by the STAINTON, SYKES and WILLIAMS 1954 Expedition to Nepal have now flowered in this country. Amongst those that have flowered in my nursery is a pink variety of great beauty and promise. From what I gathered at Chelsea, where a few of the plants were on show—though, as it turned out, not the best of them—the experts had not made up their minds as to what group this lovely meconopsis belongs.

The original seed germinated very well with us, without any special care or attention. It was sown in boxes which stood in the open, and was watered and weeded along with the ordinary run of Alpines. Seedlings in boxes and plants lined out in the open stood up to all kinds of weather. As an example of the toughness of this variety, 50 per cent of the plants lifted from the open ground in flower for the Chelsea Show, brought back and re-planted during very dry weather, survived for some weeks and continued to flower without any special attention.

This is an attractive plant at all stages of its growth. The leaves and buds are covered with golden hairs which gleam in the sun. The tight clusters of buds when they first appear in the centre of the plants are like bronze nuts.

The best plant here sent up a flower stem of 4 feet, which carried over forty flowers. Others went to 3 feet or a little over. The individual flowers are of a good size. One I measured was 2½ inches across. The colour is very good, but varies according to the season and the length of time opened. Some of the early flowers were a bright rose-pink when they first opened. Either due to the exceptionally dry, hot weather, or because it is their nature, the later flowers were a very deep pink.

Seed seems to be setting fairly freely, and I hope to harvest enough to try again to raise a batch of plants, which are almost certainly monocarpic.

H. G. LYALL

Watford.

Editor's Note. MR. W. SYKES has informed us that these plants were grown from seed collected by MR. STAINTON at 12,000 feet in open grassland under the number S.S. & W. 7943. The plants in the wild were 5 feet in height and are close to *M. nepaulensis*, of which it may be a pink form.

PLANTS AND PROBLEMS—XLI

A MIXED HEDGE

Question. We have recently bought a new house and wish to plant a stout and attractive flowering hedge. The idea of a mixed hedge occurred to us, but there seems little to be found about this sort of planting in horticultural literature. Can you please say what plants might be used for our purpose?

Answer. Although rarely seen or written about, a fine mixed hedge can be made by an inter-planting of shrubs. A particularly interesting combination is made from *Chaenomeles japonica* (sometimes referred to by its old botanical name of *Cydonia maulei*), *Ilex aquifolium* (holly), *Berberis darwinii* and the common hawthorn.

CROWN GALL ON ROOT OF APPLE TREE

Question. On digging up an old apple tree I noticed large swellings on the roots near the base. I send one of the smaller specimens and would like to know if it is a disease.

Answer. The specimen of gall on apple root sent in is one of the kind caused by Crown Gall disease which is the result of infection by the organism *Bacterium tumefaciens*. This produces galls on the roots of young apple trees which vary in size from that of a pea to almost a football on old trees. The disease may also be seen on pear, peach, plum, rose (particularly Manetti stocks), blackberry, raspberry and loganberry and no doubt on many other kinds of plants. It is thought that the effect on apple trees is not so serious as might be imagined and old trees with these galls are not believed to suffer much as regards vigour and cropping power. Smaller plants, however, may be retarded in growth and for this reason it is best to avoid planting any young tree which shows the galls although sometimes it may be possible to remove them if few in number. Where the disease is known to exist it would be best to protect any young fruit trees before planting by dipping their roots in a "sludge" made of soil mixed with one of the organo-mercurial substances in water (say 1 ounce of the mercurial in 1 gallon of water).

WISLEY TRIALS, 1957

ANNUAL CARNATIONS

Twenty-three stocks of annual carnations were received at Wisley in 1957. These were sown under glass on February 1, 1957, and the resulting seedlings were pricked out into boxes. The trial was planted in the open ground on April 29, 1957, in rows 1½ feet apart; each plant being spaced 1 foot apart in the row.

The trial was inspected by a sub-committee of the Floral Committee A on August 9, September 5 and 17, 1957, and on its recommendation the Council of The Royal Horticultural Society has made the following awards to annual carnations.

The number in brackets after the description of the variety was that under which it was grown in the trial.

BIZARRE AND FLAKE. (Raised, introduced and sent by M. Raoul Martin, Jardin des Oeillets de Provence, Carqueiranne par Toulon (Var),

France.) **H.C.** September 17, 1957. Plant 24 to 28 inches high, vigorous, bushy, erect, flowering freely; flower stems erect, medium thickness; flowers 2¼ to 2½ inches diameter, double, centre full; petals broad, slightly serrated, fancies, scarlet on yellow ground, scarlet on pink ground, magenta on pink ground and deep crimson on scarlet ground; calyx strong. Scent strong clove. [10]

ENFANT DE NICE. (Raised by J. Perrin, St. Remy, France, introduced and sent by Messrs. Hurst & Son Ltd., Kelvedon House, 60/64 Artillery Lane, London, E.1.) **H.C.** September 5, 1957. Plant 24 inches high, vigorous, bushy, erect, flowering freely; flower stems rigid, stout; flowers 2¾ to 3 inches diameter, double, centre full; petals broad, finely serrated, mixed colours, white, pink, rose, scarlet and purple; calyx strong. Scent very strong clove. [18]

EXTRA CHOICE MIXED. (Sent by Messrs. Watkins & Simpson Ltd., 26/29 Drury Lane, Covent Garden, London, W.C.2.) **H.C.** September 17, 1957. Plant 24 to 28 inches high, vigorous, bushy, erect, flowering freely; flower stems rigid, medium thickness; flowers 2½ inches diameter, double, centre full; petals broad, cut, serrated, mixed colours, white, yellow, scarlet, rose, crimson and purple; calyx fairly strong. Scent strong clove. [17]

FIRE QUEEN. (Sent by Messrs. Watkins & Simpson Ltd.) **H.C.** September 5, 1957. Plant 24 to 28 inches high, vigorous, spreading, bushy, erect, flowering freely; flower stems fairly rigid, slender; flowers 2¼ to 2½ inches diameter, double, centre full; petals medium width, very deeply serrated, Turkey Red (H.C.C. 721); calyx fairly strong. Scent strong clove. [5]

ROSE QUEEN. (Sent by Messrs. Watkins & Simpson Ltd.) **H.C.** September 5, 1957. Plant 24 to 28 inches high, vigorous, spreading, bushy, erect, flowering very freely; flower stems rigid, slender, erect; flowers 2¼ inches diameter, double, centre full; petals broad, deeply serrated, Rose Bengal (H.C.C. 25/1) fading slightly towards edges; calyx rather weak. Scent strong clove. [4]

WHITE QUEEN. (Sent by Messrs. Watkins & Simpson Ltd.) **H.C.** August 9, 1957. Plant 24 to 30 inches high, vigorous, spreading, bushy, erect, flowering very freely; flower stems rigid, medium thickness, erect; flowers 2¼ to 2½ inches diameter, double, centre full; petals broad, deeply serrated, pure white; calyx rather weak. Scent clove. [2]

DAHLIAS

Two hundred and forty-eight stocks of dahlias were grown at Wisley in 1957. Eighty-three of these stocks were grown for the first time having been selected during 1956 for trial at Wisley by the Joint Dahlia Committee of The Royal Horticultural Society and The National Dahlia Society.

The trial was inspected by the Joint Dahlia Committee on August 22 and September 3, 1957, and on its recommendation The Royal Horticultural Society and The National Dahlia Society have made jointly, after trial at Wisley, the following awards to dahlias as varieties for garden decoration.

The number in brackets after the description of the variety was that under which it was grown in the trial.

Class VI A. Giant-flowered Decorative

BURGESS RAY. (Raised and introduced by Mr. H. Stredwick, V.M.H., sent by G. F. Drayson, Esq., 23 Palmerston Road, Buckhurst Hill,

Essex.) **A.M.** September 3, 1957. Plant 4½ to 4¾ feet high, compact and erect, bearing flower stems 20 to 22 inches long. Flowers 10½ to 11 inches diameter, Primrose Yellow (H.C.C. 601) at base of florets gradually fading to Uranium Green (H.C.C. 63/3) at tips. [2]

MARGARET BOWYER. (Raised, introduced and sent by Messrs. J. Stredwick & Son, Silverhill Park, St. Leonards-on-Sea, Sussex.) **A.M.** September 3, 1957. Described R.H.S. JOURNAL 82, p. 29 (**H.C.** 1956). [1]

Class VI C. Medium-flowered Decorative

LILIAN COMPTON. (Raised, introduced and sent by Messrs. Brown & Such Ltd., Royal Berkshire Nurseries, Maidenhead, Berks.) **A.M.** September 3, 1957. Described R.H.S. JOURNAL 80, p. 137 (**H.C.** 1954). [34]

Class VI E. Miniature-flowered Decorative

MAGNIFICAT. (Raised, introduced and sent by Messrs. J. P. Bakker, Kadijk 37, Heemstede, Holland.) **H.C.** September 3, 1957. Plant 5 feet high, compact and erect, bearing flower stems 14 to 18 inches long. Flowers 2½ to 2¾ inches diameter, Mandarin Red (H.C.C. between 17 and 17/1). [204]

WHITE KENDAL PRIDE. (Raised, introduced and sent by Messrs. C. Webb & Co. Ltd., Kendal, Westmorland.) **H.C.** September 3, 1957. Plant 4 feet high, compact and erect, bearing flower stems 14 to 16 inches long. Flowers 4 inches diameter, outer florets white, inner florets cream. [46]

Class VIII B. Medium-flowered Pompon.

ANTONY PARKER. (Raised, introduced and sent by Mr. Vincent F. Parker, Esher, Surrey.) **H.C.** August 22, 1957. Plant 4½ feet high, compact and erect, bearing flower stems 12 to 14 inches long. Flowers 2⅜ inches diameter, Primrose Yellow (H.C.C. between 601 and 601/1). [199]

Class IX B. Large-flowered Cactus

CAPRIOOL. (Raised, introduced and sent by Messrs. W. Topsvoort, Aalsmeer, Holland.) **H.C.** August 22, 1957. Plant 4 to 4½ feet high, compact and erect, bearing flower stems 14 to 18 inches long. Flowers 8½ inches diameter, Scarlet (H.C.C. 19/2), Primrose Yellow (H.C.C. 601/1) at base of florets. [114]

MIRIAM. (Raised, introduced and sent by F. C. Tattersall, Esq., 33 Howard Road, Bournemouth.) **H.C.** August 22, 1957. Plant 4½ feet high, compact and erect, bearing flower stems 24 inches long. Flowers 9 inches diameter, outer florets a vivid red near Signal Red (H.C.C. 719), inner florets a slightly darker red. [120]

RENE CROWLE. (Raised, introduced and sent by Messrs. J. F. Spencer & Son Ltd., Hockley, Essex.) **H.C.** September 3, 1957. Plant 4 feet high, compact and erect, bearing flower stems 16 to 18 inches long. Flowers 9 inches diameter, a clear shade of Primrose Yellow (H.C.C. 601/1). [103]

SUNMAID. (Raised, introduced and sent by Messrs. K. Maarse Dzn. Jr., Uiterweg 32, Aalsmeer, Holland.) **H.C.** September 3, 1957. Plant 5 feet high, compact and erect, bearing flower stems 24 inches long. Flowers 8½ inches diameter, outer florets Poppy Red (H.C.C. 16/1), inner florets Poppy Red (H.C.C. 16/1) and yellow at extreme base. [112]

Class IX C. Medium-flowered Cactus

CAPITAL. (Raised, introduced and sent by Messrs. Stephen Treseder & Son, Ely Nurseries, Ely, Cardiff.) **H.C.** September 3, 1957. Plant 5 feet

high, compact and erect, bearing flower stems 20 to 22 inches long. Flowers 7¾ inches diameter, outer florets a rich glowing shade of Currant Red (H.C.C. 821/1), inner florets Currant Red (H.C.C. 821/1) with slight bluish sheen. [167]

RUBATO. (Raised, introduced and sent by Messrs. W. Topsvoort.) **H.C.** August 22, 1957. Plant 4 feet high, very compact and erect, bearing flower stems 16 to 18 inches long. Flowers 6¾ to 7 inches diameter, outer florets Primrose Yellow (H.C.C. 601/1) overlaid Carrot Red (H.C.C. 612/1), inner florets Primrose Yellow (H.C.C. 601/1) slightly touched Carrot Red (H.C.C. 612/1). [139]

Class XI. Cactus Dwarf Bedding

FRANK SOETEN. (Raised, introduced and sent by Messrs. D. Bruidegom, 63 New Baarnstraat, Baarn, Holland.) **H.C.** September 3, 1957. Plant 24 inches high, compact and spreading, bearing flower stems 8 to 12 inches long. Flowers 4¼ inches diameter, outer florets white, inner florets cream. [248]

MIDGET. (Raised, introduced and sent by Messrs. D. Bruidegom.) **H.C.** September 3, 1957. Plant 24 inches high, compact and spreading, bearing flower stems 10 inches long. Flowers 4½ inches to 4¾ inches diameter, Cyclamen Purple (H.C.C. 30/2), outer petals fading to Cyclamen Purple (H.C.C. 30/3) with age. [241]

PERENNIAL ASTERS

Seventy-five stocks of perennial asters (Michaelmas daisies) were grown at Wisley in 1957; many of these stocks have received awards in previous years and were grown to compare with the new stocks of which this year there were sixteen. In order to control wilt (*Verticillium vilmorinii*) all varieties except those in the Amellus section were propagated from tip cuttings taken in March. These cuttings were planted on April 26, 1957. The Amellus group was propagated by splitting the old plants and replanting on April 26, 1957.

The trial was inspected by a sub-committee of the Floral Committee A on September 17 and October 7, 1957, and on its recommendation the Council of The Royal Horticultural Society has made the following awards to perennial asters as varieties for garden decoration.

The number in brackets after the description of the variety was that under which it was grown in the trial.

Novi-Belgii section

ORLANDO. (Raised by Mr. P. W. Picton, introduced and sent by Messrs. The Old Court Nurseries Ltd., Colwall, Malvern, Worcestershire.) **F.C.C.** October 7, 1957. Described R.H.S. JOURNAL 81, p. 139 (**A.M.** 1955). [53]

FELLOWSHIP. (Raised by Messrs. R. Sandford & Co., introduced and sent by Messrs. Thomas Carlile (Loddon Nurseries) Ltd., Carlile's Corner, Twyford, Berks.) **A.M.** October 7, 1957. Plant 3 feet high, compact and erect habit; flowers 2⅜ inches diameter, semi-double, carried in a close panicle, Cobalt Violet (H.C.C. 634/2) fading to almost white at tips of petals. [74]

LADY EVELYN DRUMMOND. (Raised by Mr. H. J. Chaplin, introduced and sent by Messrs. H. G. & P. M. Lyall, Bricket Wood, Watford,

Herts.) **A.M.** October 7, 1957. Described R.H.S. JOURNAL **81**, p. 140 (**H.C.** 1955). [30]

LASSIE. (Raised by Messrs. R. Sandford & Co., introduced and sent by Messrs. Thomas Carlile (Loddon Nurseries) Ltd.) **A.M.** October 7, 1957. Plant 3 feet high, compact and erect habit; flowers $2\frac{1}{10}$ inches diameter, semi-double, carried in a fairly loose panicle, Mauve (H.C.C. 633/1) fading to Mauve (H.C.C. 633/3) when fully open. [72]

DESTINY. (Raised, introduced and sent by Messrs. Bakers' Nurseries Ltd., Codsall, Wolverhampton.) **H.C.** September 17, 1957. Plant $3\frac{1}{2}$ feet high, compact and erect habit; flowers $2\frac{3}{8}$ inches diameter, semi-double, carried in a close panicle, Aster Violet (H.C.C. 38/2). [25]

MABEL REEVES. (Raised, introduced and sent by Messrs. Baker's Nurseries Ltd.) **H.C.** September 17, 1957. Plant 4 feet high, compact and erect habit; flowers 2 inches diameter, double, carried in a fairly loose panicle, Cobalt Violet (H.C.C. 634/1). [34]

ORCHID PINK. (Raised by Mr. Harrison, introduced and sent by Messrs. Winkfield Manor Nurseries, Ascot, Berks.) **H.C.** September 17, 1957. Plant $4\frac{1}{2}$ feet high, compact and erect habit; flowers $2\frac{1}{2}$ to $2\frac{3}{4}$ inches diameter, semi-double, carried in a close panicle, Cobalt Violet (H.C.C. 634/2). [48]

PEERLESS. (Raised by Messrs. R. Sandford & Co., introduced and sent by Messrs. Thomas Carlile (Loddon Nurseries) Ltd.) **H.C.** October 7, 1957. Plant 4 feet high, compact and erect habit; flowers $2\frac{1}{2}$ inches diameter, double, carried in a loose panicle, a colour near Aster Violet (H.C.C. 38/2). [73]

PROFESSOR KIPPENBERG. (Raised by Messrs. Kayser & Seibart, Rossdorf Bei Darmstadt, Germany, introduced and sent by Messrs. Thomas Carlile (Loddon Nurseries) Ltd.) **H.C.** October 7, 1957. Plant $1\frac{1}{2}$ feet high, very compact and erect habit; flowers $1\frac{3}{8}$ inches diameter, semi-double, carried in a very close panicle, a colour near Aster Violet (H.C.C. 38/1). [66]

ROLAND SMITH. (Raised, introduced and sent by Messrs. Baker's Nurseries Ltd.) **H.C.** September 17, 1957. Plant $3\frac{1}{2}$ feet high, compact and erect habit; flowers $2\frac{1}{2}$ inches diameter, semi-double, carried in a loose panicle, Phlox Purple (H.C.C. 632). [24]

Amellus section

BLUE KING. (Introduced and sent by Messrs. Thomas Carlile (Loddon Nurseries) Ltd.) **F.C.C.** September 17, 1957. Described R.H.S. JOURNAL **81**, p. 140 (**A.M.** 1955). [11]

LONG BEETROOTS

Twenty-five stocks of long beetroots were received for trial at Wisley in 1957. These were sown in the open ground on May 13, 1957, in rows 1 foot apart. The resulting seedlings were later thinned to stand 6 inches apart in the row. A base dressing of fertilizer consisting of 2 parts sulphate of ammonia, 3 parts superphosphate of lime and 2 parts sulphate of potash was applied to the seed-bed at the rate of 3 oz. per sq. yd. two weeks prior to sowing.

The trial was inspected by a sub-committee of the Fruit & Vegetable Committee on September 20, 1957, and on its recommendation the Council of The Royal Horticultural Society has made the following awards to long beetroots.

The number in brackets after the description of the variety was that under which it was grown in the trial.

CLUSEED SEXTUS. (Raised by Mr. A. A. Clucas, sent by Messrs. J. L. Clucas Ltd., Ormskirk, Lancashire.) **A.M.** September 20, 1957. Plant 10 to 12 inches tall, vigorous; leaves medium size, spreading, reddish green to reddish purple; root 12 to 15 inches long, 2½ to 3 inches diameter, tapering, very smooth; flesh blood red, without zones. Crop very regular, twelve roots weighed 7 lb. 10 oz. [9]

CHELTENHAM. (Raised and sent by Messrs. Nutting & Sons Ltd., Merstham, nr. Redhill, Surrey.) **H.C.** September 20, 1957. Plant 9 to 10 inches tall, vigorous; leaves small, fairly erect, reddish green to reddish purple; root 15 inches long, 2½ to 3 inches diameter, tapering, smooth; flesh blood red, without zones. Crop regular, twelve roots weighed 8 lb. 11 oz. [8]

CHELTENHAM GREEN LEAVED SELECTED. (Sent by Messrs. D. T. Brown & Co. Ltd., Premier Seed Warehouse, Poulton-le-Fylde, Lancashire.) **H.C.** September 20, 1957. Plant 9 to 10 inches tall, vigorous; leaves fairly large, spreading, purplish green; root 15 to 17 inches long, 3½ inches diameter, tapering, smooth; flesh blood red, without zones. Crop regular, twelve roots weighed 9 lb. 12 oz. [2]

CLUSEED DOUBLETWO. (Raised by Mr. A. A. Clucas, sent by Messrs. J. L. Clucas Ltd.) **H.C.** September 20, 1957. Plant 10 inches tall, vigorous; leaves medium size, fairly erect, purplish green; root 15 to 18 inches long, 2½ to 3 inches diameter, tapering, smooth; flesh blood red, without zones. Crop regular, twelve roots weighed 9 lb. 6 oz. [10]

IMPROVED CHELTENHAM GREEN TOP. (Sent by Messrs. Harrison & Sons (Maidstone) Ltd., 6–8 Middle Row, Maidstone.) **H.C.** September 20, 1957. Plant 10 to 12 inches tall, vigorous; leaves fairly large, spreading, reddish green; root 18 to 20 inches long, 3 to 3½ inches diameter, tapering, smooth; flesh blood red, without zones. Crop regular, twelve roots weighed 14 lb. 9 oz. [5]

LONG DARK BLOOD VERTUS. (Sent by Messrs. Vilmorin-Andrieux S.A., 4 Quai de la Mégisserie, Paris, France.) **H.C.** September 20, 1957. Plant 12 to 15 inches tall, vigorous; leaves large, spreading, very dark purple; root 15 to 18 inches long, 1¾ to 2½ inches diameter, tapering, smooth; flesh dark blood red to purple, without zones. Crop very regular, twelve roots weighed 7 lb. 2 oz. [19]

LONG DEEP BLOODRED. (Raised, introduced and sent by Messrs. Coöp. Zaaizaadvereniging, W.A., West Friesland, Wijdenes, Holland.) **H.C.** September 20, 1957. Plant 10 to 12 inches tall, vigorous; leaves medium size, spreading, purplish green; root 12 to 15 inches long, 3 to 3½ inches diameter, tapering, smooth; flesh dark blood red, without zones. Crop regular, twelve roots weighed 10 lb. 5 oz. [17]

LETTUCES UNDER DUTCH LIGHTS AND FRAMES

In 1955 a unit of Dutch lights and frames was established on the Vegetable Trial Grounds and consists of 130 Dutch lights and 100 continuous cold-frames. The wooden Dutch lights, each measuring 4 feet 11 inches by 2 feet 6¾ inches, are supported on a sectional concrete surround 9 inches high at the back and 4½ inches high in the front. Each continuous cold-frame made of steel, is 6 feet 9 inches across by 1 foot 9 inches wide by 1 foot 8 inches

high at the centre. Artificial heat is not supplied to the frames nor are they placed over a hot-bed of manure.

Forty-six stocks of lettuces were received at Wisley in 1957 for trial under Dutch lights and frames. The trial was sown in the open on August 10, 1957, in stations 8½ inches square; the seedlings were subsequently thinned, leaving the strongest plant at each station. Young plants from this sowing were also transplanted 8½ inches square into each alternate Dutch light or frame on August 27, 1957, to allow comparison between the two methods.

A dressing of well-rotted compost was dug into the top spit of soil during early July 1957. The equivalent of 2 inches of rain was applied by means of overhead spray lines prior to sowing and transplanting. No further irrigation was applied to the crop. The lights and glass were placed in position over the lettuce by the middle of September.

The trial was inspected by a sub-committee of the Fruit and Vegetable Committee on October 28, 1957, and on its recommendation the Council of The Royal Horticultural Society has made the following awards to lettuces as varieties suitable for sowing in August and maturing in the autumn and early winter.

The measurements given are those taken from the plants which were sown in stations and protected by the continuous cold-frames. The number in brackets after the description of the variety was that under which it was grown in the trial.

MAIKONIG. (Raised, introduced and sent by Messrs. J. E. Ohlsens Enke, Copenhagen, Denmark.) **A.M.** October 28, 1957. Plant 5¾ inches high, 11 inches across, compact; leaves light green, crumpled and slightly blistered; heads firm, maturing evenly, fit to cut on October 26. [21]

MAY KING. (Raised, introduced and sent by Messrs. A. Hansen, Kastrup, Amager, Denmark.) **A.M.** October 28, 1957. Plant 5½ inches high, 10½ inches across, compact; leaves light green, crumpled and blistered; heads firm, maturing evenly, fit to cut on October 23. [22]

MAY KING FORCING STELLA. (Raised, introduced and sent by Messrs. L. Clause S.A., Bretigny-sur-Orge, France.) **A.M.** October 28, 1957. Plant 5¾ inches high, 10 inches across, compact; leaves light green, crumpled and slightly blistered; heads firm, maturing evenly, fit to cut on October 23. [20]

PROGRESS. (Raised, introduced and sent by Messrs. J. E. Ohlsens Enke.) **A.M.** October 28, 1957. Plant 5½ inches high, 9 inches across, compact; leaves light green, crumpled; heads firm, maturing very evenly, fit to cut on October 23. [4]

TOZER'S MAY PRINCESS. (Raised by Dr. C. D. R. Dawson, introduced and sent by Messrs. A. L. Tozer Ltd., Pyports, Church Street, Cobham, Surrey.) **A.M.** October 28, 1957. Plant 5 inches high, 10 inches across, compact; leaves light green, crumpled; heads firm, maturing very evenly, fit to cut on October 24. This variety is the same as that which received an **A.M.** in 1956 as 'May Princess' (see R.H.S. JOURNAL, **82**, p. 265). [27]

MAY KING. (Raised, introduced and sent by Messrs. L. Daehnfeldt Ltd., Odense, Denmark.) **H.C.** October 28, 1957. Plant 5 inches high, 11½ inches across, compact; leaves light green, crumpled; heads firm, maturing evenly, fit to cut on October 25. [24]

MAY KING IMPROVED. (Raised, introduced and sent by Messrs. Nutting & Sons Ltd., Merstham, nr. Redhill, Surrey.) **H.C.** October 28,

1957. Plant 6 inches high, 11 inches across, compact; leaves light green, crumpled; heads firm, maturing evenly, fit to cut on October 22. [19]

MAY PRINCESS SELECTED. (Raised by Messrs. A. L. Tozer Ltd. and sent by Messrs. Watkins & Simpson Ltd., 27/29 Drury Lane, Covent Garden, London, W.C.2.) **H.C.** October 28, 1957. Plant 6 inches high, 11 inches across, compact; leaves light green, crumpled and slightly blistered; heads firm, maturing evenly, fit to cut on October 25. [29]

MAY QUEEN. (Sent by Messrs. D. T. Brown & Co. Ltd., Premier Seed Warehouse, Poulton-le-Fylde, Lancashire.) **H.C.** October 28, 1957. Plant 5 inches high, 10 inches across, compact; leaves light to medium green, crumpled; heads firm, maturing evenly, fit to cut on October 26. [23]

PROGRESS. (Raised, introduced and sent by Messrs. A. Hansen.) **H.C.** October 28, 1957. Plant 5¼ inches high, 9 inches across, compact; leaves light green, crumpled; heads firm, maturing evenly, fit to cut on October 25. [5]

SUMMER KING. (Raised by Mr. Kaufman, Basle, Switzerland, introduced and sent by Mr. Otto Hauenstein, Rafz, Switzerland.) **H.C.** October 28, 1957. Plant 4 inches high, 9½ inches across, very compact; leaves light green, crumpled and blistered; heads hard, maturing evenly, fit to cut on October 24. [46]

TOZER'S MAYBELLE. (Raised by Dr. C. D. R. Dawson, introduced and sent by Messrs. A. L. Tozer Ltd.) **H.C.** October 28, 1957. Plant 5 inches high, 10½ inches across, compact; leaves light green, slightly crumpled and slightly blistered; heads very firm, maturing evenly, fit to cut on October 21. [32]

TOZER'S MAYFAIR. (Raised by Dr. C. D. R. Dawson, introduced and sent by Messrs. A. L. Tozer Ltd.) **H.C.** October 28, 1957. Plant 5 inches high, 10 inches across, compact; leaves light green, slightly crumpled; heads firm, maturing evenly, fit to cut on October 23. [31]

WESTLAND WONDER. (Raised and sent by Messrs. Broersens, Harenkarspel (post Tuitjenhorn), Holland.) **H.C.** October 28, 1957. Plant 6½ inches high, 10 inches across, compact; leaves light green, slightly crumpled; heads firm, maturing evenly, fit to cut on October 27. [26]

PLANTS TO WHICH AWARDS HAVE BEEN MADE IN 1957

Genista lydia F.C.C. June 4, 1957. A European native, this pretty shrub is best planted overhanging an outcrop on the rock garden, so that its arching habit may be seen to full advantage. It makes a small bush about 2 feet in height, with intercrossing slender branches bearing lanceolate leaves $\frac{3}{10}$ inch and $\frac{1}{10}$ inch wide, and during May and June sub-terminal racemes of Lemon Yellow (H.C.C. 4) flowers, each of which is $\frac{3}{8}$ inch across, and $\frac{3}{8}$ inch long, with a broad standard, oblong wings and keel. Exhibited by Messrs. T. Carlile (Loddon Nurseries Ltd.), Carlile's Corner, Twyford, Berks.

Gentiana sino-ornata F.C.C. September 20, 1957. Originally confused with *G. ornata* from Nepal, this Chinese species has become a general

favourite with gardeners because of its beauty, ease of cultivation and prolonged late flowering period. It received the Award of Merit in 1916, and the Award of Garden Merit in 1927. In the pan exhibited there were about forty-five open flowers, Gentian Blue (H.C.C. 42) in colour, and many unopened buds. The outside of the corolla, which is 2 inches long, is adorned with yellow-green bands, which are visible also inside the trumpet. The plant prefers rather moist conditions, and an absence of chalk or lime is desirable. Exhibited by Major and Mrs. Knox Finlay, Keillour Castle, Methven, Perthshire.

Viburnum betulifolium F.C.C. September 24, 1957. This most attractive species received the Award of Merit over twenty years ago. It is a deciduous shrub reaching a height of 12 feet, with glabrous, purplish-brown stems bearing ovate, coarsely-toothed leaves up to 4 inches long. The small white flowers, borne in seven-rayed, flat clusters, are followed by bright red, globose berries. Although this does not fruit freely as a young plant it is one of the best autumn-fruiting shrubs when mature. Exhibited by Sir Frederick Stern, O.B.E., M.C., F.L.S., V.M.H., Highdown, Goring-by-Sea, Sussex (Fig. 29).

Androsace jacquemontii A.M. April 2, 1957. The flowers of this attractive *Androsace* are borne on reddish hairy stems, and are carried about 1½ inches above the leaf rosettes. In the plants exhibited from two to six flowers, Roseine Purple (H.C.C. 629/1) in colour, were open on each stem, there being about one hundred and fifty open flowers in an 8-inch pan. The leaves were soft green, margined with white hairs, and numerous shoots terminating in young leaf rosettes radiated from the centre of the parent rosette. Exhibited by Messrs. Shipton-on-Cherwell Nurseries, Kidlington, Oxon.

Anthericum algeriense A.M. June 4, 1957. This beautiful member of the lily family is native to the mountains of Algeria. The leaves are lanceolate-linear, 2 feet 6 inches long and about ¾ inch wide at the base. The stems are up to 3 feet in length, strong, and somewhat glaucous. The white flowers, which have prominent yellow anthers, are carried in a loose scape 12 to 18 inches long, and make a pleasing display in May and June, provided the plant is situated in a reasonably moist position in the garden. Exhibited by The National Trust, Hidcote and Bartrim Manor, Chipping Campden, Glos.

Calluna vulgaris 'Joan Sparkes' A.M. September 10, 1957. This form of Scotch heather or ling will make a useful addition to the range of varieties already found in gardens. The plant has a somewhat lax habit and the flowers are coloured Orchid Purple (H.C.C. 31/3). The exhibitor states that the variety occurred on a normal branch of *Calluna vulgaris* 'Alba plena' in 1950. Exhibited by Mr. J. W. Sparkes, Beechwood Nurseries, Bedley, Redditch, Worcs.

Campanula broussonetiana A.M. June 18, 1957. This very desirable annual is a native of Morocco, and is also widespread in Portugal and Central Spain. The plants exhibited were 10 or 11 inches high. The stems were slender and much branched and there were

several hundred open flowers, Cobalt Violet (H.C.C. 634 to 634/1) in colour, in an 8-inch pan. The lower leaves were ovate-kidney-shaped, and the upper leaves ovate and clasping the stem. The plant is figured in the *Botanical Register*, Vol. 29, tab. 19, as *Campanula loeflingii*, under which name it frequently appears in other literature at the present day. Exhibited by The Director, Royal Botanic Gardens, Kew.

Cassiope (fastigiata × tetragona) 'Edinburgh' A.M. April 30, 1957. This natural hybrid was a chance seedling in the Royal Botanic Garden, Edinburgh. It does not set seed, but is easy to propagate. The plant exhibited was about 7 inches high and 12 inches across, and consisted of about fifty flowering stems of a dark green colour, but light green at the tips. There were about twelve open flowers on each stem, white in colour, and measuring about $\frac{3}{16}$ inch across. The calyx was green with pink-tipped sepals. Exhibited by the Royal Botanic Garden, Edinburgh (Fig. 40).

Clematis napaulensis A.M. November 19, 1957. A vigorous climber for the cool greenhouse, hardy only in the warmest localities. At the nodes of its long cinnamon-brown stems it produces twin clusters of about six ternate, bright green, glabrous leaves and three or four pendulous flowers on inch-long pedicels. The flower has four greenish white sepals $\frac{3}{8}$ inch long and a mass of exserted purple stamens. Exhibited by The Director, Royal Botanic Gardens, Kew.

Coronilla glauca A.M. October 22, 1957. An evergreen shrub hardy in the South and West, reaching a height of 5 or 6 feet. It has pinnate leaves 2 inches long composed of seven obovate, grey-green leaflets. The rich yellow flowers, in heads of about a dozen, are produced in spring and usually again in autumn. Exhibited by G. L. Pilkington, Esq., Grayswood Hill, Haslemere.

Crocus vernus var. albiflorus A.M. March 5, 1956. This small white form of *C. vernus* is so abundant on the St. Gothard pass that the flowers, seen from a distance, resemble snow. The specimens exhibited were collected in the Karst mountain region of Jugoslavia. There were about twenty flowers in the pan, some being pure white, while in others the petals bore faint mauve stripes. The three anthers were yellow and the style orange. The average height was about $1\frac{1}{2}$ inches. Exhibited by E. Hodgkin, Esq., Shelleys, Hare Hatch, Twyford, Berks.

Datura aborea knightii A.M. July 2, 1957. This is a suitable plant for the larger cool greenhouse. It makes a tree some 10 feet in height, and is imposing by reason of its large elliptic-oblong, entire, hairy leaves, which are up to 12 inches long and 8 inches wide, and also because of the striking white flowers. These are 9 inches long and six inches across, tubular and spathe-like, double, with reflexed pointed lobes. The calyx is pale green and 3 inches long, and is to be distinguished from that of *D. cornigera*, in that it bears no horn. Exhibited by The Director, Royal Botanic Gardens, Kew, Richmond, Surrey.

Delphinium 'Royal Marine' A.M. June 18, 1957, as a variety for show purposes. Plant $4\frac{3}{4}$ feet tall; flower spike 2 feet 10 inches long,

6¼ inches diameter at base, blunt, flowers closely spaced; flower 3⅝ inches diameter, spur short, pedicel long, Bishops Violet (H.C.C. 34) overlaid French Blue (H.C.C. 43) along centre of petal; eye white with yellow hairs. Shown by Messrs. Blackmore & Langdon, Twerton Hill Nursery, Bath, Somerset.

Delphinium 'Sea Mist' A.M. June 18, 1957, as a variety for show purposes. Plant 4½ feet tall; flower spike 2 feet 8 inches long, 6½ inches diameter at base, tapering, flowers closely spaced; flower 3⅝ inches diameter, spur medium length, pedicel long, Spectrum Blue (H.C.C. between 45/2 and 45/3) touched at tips of petals and margins with Phlox Purple (H.C.C. 632/2); eye white with yellow hairs. Raised and shown by Messrs. Blackmore & Langdon.

Hydrangea macrophylla 'Altona' A.M. October 22, 1957. This variety has a flattened globose head, 3 inches across, made up of a large number of sterile flowers, each consisting of four rhomboid, crenate-serrate segments. In the summer the colour varies from lobster-pink to mid-blue, according to the acidity of the soil. Later the florets become Indian Lake (H.C.C. 826), grading to yellowish-green in the shaded parts of the inflorescence. Exhibited by Mr. M. Haworth-Booth, Farall Nurseries, Haslemere.

Lilium 'Formobel' A.M. May 20, 1957. This lily has the triploid number of chromosomes, and is the result of hybridizing the diploid *L. formosanum* with tetraploid *L. longiflorum*. The cut stem shown was 3 feet 4 inches in height, the leaves numerous, linear, up to 8 inches long and ½ inch wide. The flowers, of which there were nine to a stem, were horizontal, white, with a green shaded throat, trumpet shaped, the tubes 7 inches long and 5 inches wide, the segments somewhat reflexed and 2⅝ inches across. This is a plant suitable for the cool greenhouse, and will flower in two years from seed. It was raised by Mr. J. Newell, M.B.E., and exhibited by The Director, John Innes Horticultural Institution, Bayfordbury, Hertford.

Lilium 'Yellow Ochre' A.M. July 16, 1957. Considered by many to be the finest yellow hybrid lily yet raised, this is indeed a plant for the connoisseur. The stems are 3 feet 6 inches in length and bear dark green stem-clasping leaves 6 inches long and ⅝ inch wide. The flowers, of which there are up to eight to a stem, are carried on slender pedicels 3½ inches long. The calyx tube is 4 inches long, the segments are much reflexed, 4½ inches long and 2 inches wide. The colour of the flowers is near Empire Yellow (H.C.C. 603/2) with a greenish line down the centre of each segment, and the anthers are brown. Exhibited by The Commissioners for Crown Lands, The Great Park, Windsor, Berks.

Mandevilla suaveolens A.M. June 4, 1957. This is a well-known climbing plant, and is suitable for the cool greenhouse, although in the mildest parts of the country it will grow well if planted against a south wall. The stems are terete, and bear cordate or oblong cordate entire dark green leaves, 2 to 3½ inches long and 1 to 2 inches wide. The glistening white flowers are freely produced in axillary clusters and are

sweetly scented. The calyx is five-parted, the corolla forms a tube 1½ inches long and ¾ inch wide, with a bell-shaped somewhat hairy throat, and five pointed lobes, each of which is 1 inch long and ¾ inch across. Exhibited by L. Maurice Mason, Esq., Talbot Manor, Fincham, King's Lynn, Norfolk.

Pelargonium 'Muriel Parsons' A.M. September 24, 1957. A very pleasing Zonal Pelargonium which arose as a seedling from 'Christine'. The Fuchsine Pink (H.C.C. 627/1) flowers measure 2 inches across and are borne in large well-formed trusses carried on stout stems. The upper petals are white at the base with veining of the prevailing colour. Raised and shown by Mr. F. Parsons, N.D.H., The Royal Gardens, Sandringham, Norfolk.

Pernettya prostrata var. pentlandii A.M. September 24, 1957. A low growing, evergreen shrub raised from seed collected by MR. E. K. BALLS in Mexico in 1938. It has wiry, strigose stems bearing elliptic, obscurely toothed leaves ⅝ inch long. The tiny bell-shaped flowers, grouped near the tips of the twigs, are followed by globose, white, purple-flushed berries ⅜ inch long. Exhibited from the R.H.S. Gardens, Wisley, Ripley, Surrey.

Pleione limprichtii A.M. April 2, 1957. A native of Eastern Tibet, this orchid is stated to be hardy, at least in a cold greenhouse. In the pan exhibited there were six open flowers, borne on flowering stems 1½ inches high. The two upper petals and three sepals were Phlox Purple (H.C.C. 632 to 632/1) in colour. The outside of the labellum was paler (H.C.C. 632/2 to 632/3) with rather darker veining, while the inside of the labellum was thickly spotted and streaked with Spinel Red (H.C.C. 0023). Exhibited by E. Hodgkin, Esq., Shelleys, Hare Hatch, Twyford, Berks.

Polygala calcarea A.M. May 20, 1957. This plant is a native of chalk grasslands over much of Western Europe, including the British Isles, where it is local and confined to southern and eastern districts. It is said to have a very long flowering period. In the pan exhibited there were about three hundred flowering stems, each bearing about five open and several half-open flowers. These prostrate stems radiated from the centre to form a mat 12 inches across, and curved upwards towards the tips so that the flowers were borne an inch or two above the leaves. The flowers were Hyacinth Blue (H.C.C. 40 to 40/1) in colour. The tube of the flower and the fringed lip were much paler, the latter being tinged with pink. Exhibited by The Principal, Waterperry Horticultural School, Wheatley, Oxford.

Polygonum affine A.M. September 20, 1957. This plant, introduced from Nepal by COLONEL LOWNDES in 1950 under the collector's number L. 1357, is the true *P. affine*. It differs from the plant usually grown in gardens under that name in that the flowering stems are shorter, the flower heads broader and the flowers themselves larger. It also has a different geographic distribution. In the pan exhibited there were thirty-three flowering spikes, just over 8 inches high, the inflorescences

being 2½ inches long and ¾ inch across. The colour varied from Spinel Red (H.C.C. 0023) to Fuchsia Pink (H.C.C. 627/3) or, even paler, Rose Pink (H.C.C. 427/3). The lanceolate leaves, glossy green above and pale green beneath, measured 4½ inches long, including the petiole, and ¾ inch across, the margins being slightly serrate. Exhibited by Major and Mrs. Knox Finlay, Keillour Castle, Methven, Perthshire.

Polygonatum giganteum A.M. May 20, 1957. One of the hardiest of plants, this is a native of North America. It is of graceful habit, with curving glabrous stems 2 to 4 feet in height, bearing alternate, entire, oblong, deeply nerved leaves, 3 to 6 inches long, and 1 to 2¾ inches wide. The pendulous flowers are borne on slender pedicels ½ inch long in axillary clusters of three or four. The perianth tube is white, tipped green, ⅞ inch long, constricted in the middle, with short pointed lobes. Exhibited by The Crown Estate Commissioners, The Great Park, Windsor, Berks.

Primula bellidifolia A.M. May 20, 1957. The flowers of this primula, a native of the Eastern Himalaya, are a varying shade of Methyl Violet (H.C.C. 39). They are sessile, about fifteen flowers being clustered in a head about 1½ inches across. The scape which bears the flowers may vary from 6 to 12 inches in height. The leaves are about 4 inches long, including the petiole and about 1½ inches across. They are rather coarsely toothed, slightly hairy above and hairy on the midribs and veins beneath. This species is a member of the Section Muscarioides. Exhibited by Major and Mrs. W. G. Knox Finlay, Keillour Castle, Methven, Perthshire.

Primula ioessa A.M. June 11, 1957. A member of the section Sikkimensis, this primula is a native of S. and S.E. Tibet. It was first discovered as recently as 1935, and the colour of the flowers appears to vary from white to violet-purple. In the specimens exhibited the colour was Sea-Lavender Violet (H.C.C. 637/2) shading to Mallow Purple (H.C.C. 630/1) at the base, the corolla being evenly coated with farina within. The seven flowering stems varied from 10 inches to 14 inches in height, each bearing from three to seven funnel-shaped flowers. Both the scapes and the bell-shaped, almost black calyces were farinose, but the oblanceolate deeply-toothed leaves were glabrous. Exhibited by R. B. Cooke, Esq., Kilbryde, Corbridge, Northumberland.

Rondeletia odorata A.M. September 24, 1957. A shrub introduced from Cuba in 1836. It has somewhat straggling growths reaching a height of 3 feet, clothed with opposite, ovate leaves 2 inches long. The small, five-petalled vermilion flowers are carried in terminal corymbs. It requires warm greenhouse treatment. Exhibited by L. Maurice Mason, Esq., Talbot Manor, Fincham, King's Lynn, Norfolk.

Rose 'Dorothy Peach' A.M. October 8, 1957. This very attractive H.T. variety is the result of a cross between 'Peace' and 'Lydia'. Its fragrant Chrome Yellow (H.C.C. 605) flowers are large and of very good form. The growth is vigorous with dark green, rather small foliage showing a high resistance to disease. Raised and shown by

Mr. Herbert Robinson, M.B.E., Victoria Nurseries, Burbage, Hinckley, Leicestershire.

Rose 'Ohlala' A.M. September 10, 1957. A rich deep red floribunda variety raised in Germany by M. TANTAU. The double flowers measure 2½ to 3 inches across when fully open and are freely produced in well-spaced trusses. The habit of growth is very vigorous and the plant is highly resistant to mildew. Introduced and exhibited by Messrs. Wheatcroft Bros. Ltd., Ruddington, Nottingham.

Rosa chinensis mutabilis A.M. July 16, 1957. Lovers of rare and fine plants will find much to delight them in this graceful and floriferous shrub rose. It begins to open single flowers in June, and continues to do so until the arrival of the first frosts in autumn. The branches are slender and have a greyish bloom overlying the true bronze colour. The leaflets number three to five, and are acuminate, serrate, a lustrous dark green above and paler green beneath. The flowers which are borne singly or, rarely, in pairs, are 2½ inches across, yellow in the bud, opening to Rose Opal (H.C.C. 622) and becoming Neyron Rose (H.C.C. 623/1) as they fade. The petals are broadly ovate, 1 inch across and 1 inch long, and there is a cluster of bright yellow stamens in the centre. Exhibited by Messrs. The Sunningdale Nurseries, Windlesham, Surrey.

Roscoea cautleoides 'Grandiflora' A.M. June 4, 1957. This was an improved seedling which appeared amongst a batch of seedlings of the type plant. It comes more or less true from seed. The flowers are a pale shade of Chartreuse Green (H.C.C. 663/2 to 663/3) and measure about 2½ inches across, the labellum being about 1½ inches in width. The flowering stems are stout, and about 9 inches high, while the glossy leaves are 1½ inches wide and up to 5 inches long, their bases clasping the stem. The calyx is pink. Exhibited by The Director, Royal Botanic Gardens, Kew.

Sedum ewersii A.M. September 20, 1957. The plant exhibited had a spread of 19 inches by 15½ inches, and carried about two hundred heads of flowers, each consisting of from ten to twenty flowers, Magenta Rose in colour, the petals corresponding to H.C.C. 027/2 and the centre of the flower to H.C.C. 027/1. The stems were reddish and the foliage was glaucous green, faintly tinged with pink. Exhibited by Major-General and Mrs. D. M. Murray-Lyon, 28a Inverleith Place, Edinburgh 4, under the name of *Sedum pluricaule*.

Thunbergia grandiflora A.M. July 16, 1957. This is a magnificent plant for the large heated greenhouse. It is a shrubby climber, with opposite petioled, angular-cordate, palmately five-veined leaves, which are 3½ inches long and 2½ inches broad. The flowers are carried on stout racemes up to 1 foot long and are often thickly clustered. Each flower is Lobelia Blue (H.C.C. 41/1) in colour, with a pale yellow throat, and approximately 3 inches long and 3 inches wide. The flower tube is somewhat conical, the five lobes rounded and spreading, the two upper lobes erect. Exhibited by The Director, Royal Botanic Gardens, Kew, Richmond, Surrey.

ORCHIDS

Aerides (Herman Slade g.) 'St. Albans' F.C.C. July 16, 1957. A large plant of this fine hybrid was exhibited by Messrs. Sanders (St. Albans) Ltd., St. Albans, Herts. The parents are two Asiatic species *A. lawrenceae* and *A. fieldingii*. The plant exhibited bore then pendulous spikes and on one of the largest spikes were about one hundred and fifty small flowers. The flowers gave off a heavy scent. The colour of the individual flowers is whitish and rosy-mauve. The whitish tepals are incurved and coloured towards the apex, and a fine spotting of purple is present over much of the surface, especially on the inner tepals. The labellum is held almost horizontal with an undulating margin and a strongly upturned apex. This tepal has two side lobes which meet just below the beaked column. The labellum is more or less uniformly coloured rosy-mauve.

Orchis elata F.C.C. June 4, 1957. This fine hardy orchid comes from Algeria. The stout, erect, ribbed stems are 2 feet or more in length, and bear dark green lanceolate stem-clasping leaves, which are 2½ inches wide and 8 inches long at the base of the plant, and become shorter and narrower towards the top. The flowers are borne in dense terminal spikes, 2 inches wide and 6 to 7 inches long. The individual flowers are ¾ inch wide and 1 inch long, Bishop's Violet (H.C.C. 34) in colour, speckled with deeper purple on the lower lobes. Exhibited by Mrs. Gwendolyn Anley, St. George's, Wych Hill Lane, Woking, Surrey.

Promenaea xanthina 'Orchidhurst' A.M. July 16, 1957. The plant exhibited is a particularly good specimen of this Brazilian species. Fifty flowers were present on the plant exhibited. The habit is dwarf and the flowers do not rise above the leaves, the latter not exceeding about 6 inches.

Individually flowers are 2 inches wide and 1½ inches deep. The general colour is bright golden-yellow. The tepals are strongly acute and possess a shallow groove down the centre. The labellum has a broad main lobe and two small erect side lobes. On the main lobe are a few short purple streaks and the side lobes are covered with fine purple dots. The column has purple bands down its ventral surface. Exhibited by R. Grubb, Esq., Lavender House, Chaldon, Caterham, Surrey.

BOOK NOTES

"The World of the Soil." By Sir E. John Russell. 226 pp. Illus. (Collins—The New Naturalist Library.) 25*s*.

A new book by Sir John Russell is always an event in itself, and the reader can always be assured of a factual account of the subject-matter, presented in a clear and interesting manner. The title of the book is well chosen, and Sir John has described this fascinating world in his own inimitable and scholarly way. Like other books of the series, the subject-matter is such as to appeal to all lovers of nature and the countryside and to all progressive farmers and gardeners; also to students who desire an introductory account to their soil studies.

Gardeners, in particular, will find the chapters on soil formation and the soil population not only illuminating in their contents but really thrilling. They may also receive some shocks to preconceived ideas: "There is no clear evidence that earthworms play an important part in promoting soil fertility of garden soils, only grass benefits"; and "we get only the by-products of the activity of soil organisms"—they don't exist for the gardener!

The book is well illustrated with fine photographs and excellent diagrams, and the printing is of a high standard.

There are a few errors, one or two factual and the others in printing. The following may be mentioned: Plate I—for "systems" read "symptoms"; p. 111, "tale" to read "tail"; footnote, p. 101, for "add ½" read "reduce by ½"; p. 192, hydrangea colour "red when pH low and blue when high" should be reversed.

This book, which is a worthy member of the New Naturalist Series, should not only be read by all garden lovers, but should be accorded a prominent place among their gardening books.

T. WALLACE

"Proceedings of the Third British Weed Control Conference, 1956." Vols. I and II. 870 pp. (Weed Control Council.) £2 2s.

These two volumes reporting the Conference comprise over eight hundred pages, of more than eighty contributed papers, with a useful index of twenty-six pages. Not unnaturally the majority of these papers deal with aspects of primary interest to farmers rather than to horticulturists, but several have a more direct interest for the latter. Many are concerned with the evaluation of the less familiar herbicides and include the reported effective use of Dalapon (2,2-dichloropropionic acid) at about three ounces per rod, for the control of horsetail, which will raise the hopes of those who endure this pest.

The value of chemical herbicides for the destruction of weeds in pea crops is well recognized, as also the attendant risks of injury to the peas themselves. It is therefore of no little interest to learn of the evidence, here furnished, that the risk of crop injury is appreciably increased after strong winds due to soil particles abraiding the wax covering or even the cuticle of the pea foliage, thus facilitating the penetration of the herbicidal spray. The tests on relatively new herbicides include a number of reports upon the Phenoxybutyrics. Comparative tests carried out by the A.R.C. Unit at Oxford reveal that for several garden weeds such as *Atriplex patula*, *Polygonum aviculare*, *P. lapathifolium* and *Sonchus asper*, 2,4-D is more toxic than MCPA. The enhanced selectivity of the Phenoxybutyric acids as compared with the more familiar Phenoxyacetic acids renders them attractive in relation to weed control in both cereal and clover crops, even though the herbicidal action may not always be as great.

Other papers in the report treat of theoretical and technical aspects of spray application and the whole constitutes an interesting presentation of present problems and prospects in this field which anyone interested in herbicidal control should peruse.

E. J. SALISBURY

"Gardens of Japan." By Tetsuro Yoshida. 11″ × 8⅞″. Illus. (Architectural Press, London.) 3 gns.

In England a garden devoid of blossom would be unthinkable. Not so in Japan; there flowers are rigorously excluded from many gardens because they are supposed to detract from their reposeful atmosphere and interfere with their owner's religious meditations! This does not mean that flowering plants are unpopular in Japan: on the contrary they are widely and, incidentally very skilfully, cultivated throughout the length and breadth of the country; but they are mostly grown in pots and staged on benches apart from the garden proper.

A typical Japanese garden based on traditions which have been faithfully handed down from the fifteenth century, may have an archaic and sombre charm of its own, and very possibly be aesthetically satisfying, but I venture to think that the average European will find the total absence of colour, save only that of green foliage, more than a little depressing after a while.

The author of this book is clearly more of an architect than a horticulturist and it is very definitely as such that he approaches his subject. To him the correct siting of a classical garden's inanimate components—its mounds of earth, its pools of water and, especially, its weather-worn rocks—is of far more importance than the selection and subsequent care of the small, often artificially stunted, trees and shrubs which go with them.

It is to be regretted that Tetsuro Yoshida in this copiously illustrated work—the text occupies rather less than a quarter of the whole book—has mainly confined his studies to the larger palace, park and tea-house gardens: one would have liked to learn a little more about those of humbler folk, of the Japanese equivalents of our English cottage and villa gardens if, indeed, there are any of these in that greatly overcrowded land.

COLLINGWOOD INGRAM

"Everyman's Encyclopaedia of Gardening." Edited by Stanley B. Whitehead. Revised Ed. 786 pp. (Dent.) 21*s*.

This compendious little volume of 786 pages derives from *An Encyclopedia of Gardening*, first published in the "Everyman's Library" in 1911. It contains wide information on gardening and cognate matters and is so comfortable to hold in the hand, and to consult, that it is to be regretted that considerable fault must be found with some of its contents.

This applies particularly to the florists' hybrids of some popular genera. So far as roses are concerned, many old stalwart varieties, but few modern, are given. The name of Ballard does appear in the list of Michaelmas daisies, but none of the wonderful varieties bearing ecclesiastical titles. The tall bearded iris varieties are mostly archaic, running back to 1868. The most modern dates from 1934. I doubt if some listed are obtainable at all today.

The daffodil classification given is not that compiled jointly by The Royal Horticultural Society and the General Bulb Growers' Society of Haarlem, for some years now universally employed.

The section on hydrangeas assumes these not to be completely hardy plants, and the notes on their cultivation do not accord with accepted modern practice.

The designs for "rustic work", if such has ever to have been commended, are completely out of keeping with the taste of today.

A curious slip noted is that it is stated that *Sternbergia lutea* flowers in autumn "before the leaves".

MORTON

"Garden Design Illustrated." By John A. Grant and Carol A. Grant. 160 pp. Illus. (University of Washington Press.) $5.75.

Reduced to its simplest terms, garden design can probably be best defined as the handling and arrangement of line and mass, form and texture, with the object of making a garden in accord with its site and surroundings and possessing, more than anything else, that elusive quality of atmosphere which is as difficult to harness as the acoustics in a room. The authors of this well-produced American volume, one of them an experienced landscape architect in the Pacific North-west, have the right approach to the subject. In a series of scholarly essays, they set out the fundamental principles of garden layout and planting, which are widely accepted but seldom so well analysed, and if they do nothing else, they at least emphasize the value and truth of the teachings of William Robinson and Gertrude Jekyll, that the whole art of successful garden design is to relate the plants to the site and so use them that the garden appears as a perfectly natural growth where all man-made effort has been carefully hidden. *Ars celare artem.* Mr. Grant is a good writer, whose talents as a designer and ability to present the subject in a simple, friendly way, have enabled him to produce a book that has much sound information and good sensible advice. Although primarily intended for the American garden-maker on the Pacific seaboard, it is not without value and interest to a much wider circle, for anyone with a knowledge of the plant material suited to their district and climate should be able to profit from a study of the design principles set out and supplemented by many excellent illustrations showing their application in practice.

G. C. TAYLOR

"Botany, An Introduction to Plant Science." By W. W. Robbins, T. E. Weier and C. R. Stocking. 2nd ed., 1957, 578 pp. (John Wiley and Sons, Inc., New York; Chapman and Hall Ltd., London.) 56*s*. net.

Many features of this textbook are excellent: the fount is clear, the illustrations are numerous and appropriate, and the subject is as well covered as possible in a book of this size. Of special importance is the arrangement and treatment of the materials, so designed as to interest the student by adding special information to his general knowledge. Botanical concepts are presented in an orderly and logical sequence and the interpolation of structural and physiological details is highly commendable.

Botanical teaching, and one might add research, suffers from the artificial divorce of morphology and physiology.

The importance of plants to man is emphasized in the introduction. The natural occurrence of plants and their distribution, and a brief account of the major types of vegetation precedes an outline of plant classification. The internal structure and physiology of the plant body are summarized and the gross morphology and anatomy of the stem, root, and leaf are dealt with in separate chapters. An outline explanation of soil and mineral nutrition precedes more detailed accounts of transpiration, conduction, absorption, photosynthesis, and respiration. The structure and behaviour of flowers, fruits, seeds, and seedlings, naturally require a fair number of pages for description. It is interesting to note that the modern concept of inheritance in plants is considered before the plant is dealt with as a living mechanism. The structure and behaviour of the groups of plants are summarized in a series of ten chapters which include two devoted to the Fungi and one to the Viruses. An attempt to give a short view of the evolution of plants concludes the book, apart from a fairly full glossary and an adequate index.

The price of books continues to rise and since botanical, like other scientific textbooks, continually need re-editing or re-writing students must become more dependent on libraries. To pay nearly three pounds for a single volume is more than the majority of those needing "an introduction to plant science" can afford. There is, however, every reason to recommend the work here under notice to those in charge of both general and special libraries. In particular, horticultural students should find it of great use in giving them a solid foundation of botanical information by which to understand the theory and practice of horticulture.

W. B. TURRILL

"Irises for your Garden." By H. G. Witham Fogg. 90 pp. Illus. (Foyle.) 3s.

This little book can be recommended to all who are starting a collection of irises. The newest and most expensive varieties will not be found here but there is nevertheless a reliable selection of standard varieties, much good advice on cultivation and descriptions of the commoner and also a few of the not so common species.

PATRICK M. SYNGE

"Handbook of Hardy Border Plants." By Roy Genders. 8vo. 296 pp. Illus. (John Gifford Ltd., London, 1957.) 21s.

This is a book of pleasing appearance, nicely printed and illustrated, and well bound, but its contents are rather disappointing. The author has taken his material from notes made during the past twenty-five years, and much of it is sound. The chapters on the establishment and maintenance of the border, and the lists of species and varieties with which to plant it, are in the main reliable. The eye of the critical reader is, however, continually irritated by mis-spelt names and misplaced capital initial letters, and there are a number of statements which appear to be based upon the author's imagination. For example, we are told that the bearded irises remained comparatively neglected until the 1930's! And that the only Michaelmas daisies grown before then grew to a height of 5 feet and covered themselves in tiny pale mauve flowers! One feels that the author's notebook is not wholly trustworthy.

N. K. GOULD

ORDERS FOR BOOKS

The Society does not sell any publications other than its own. Orders for books reviewed should therefore be sent direct to the booksellers and not to the offices of the Society.

ERRATA

R.H.S. JOURNAL, Vol. **82,** December 1957. Apple Scars and Blemishes, p. 519—The Spray programme should read as follows:

4. Early pink bud	DDT/BHC (if necessary) Lime Sulphur	Aphis, capsid weevil, caterpillars Scab

R.H.S. JOURNAL, Vol. **83,** January 1958. Wisley Trials, 1957, p. 33—the flowers of Sweet Pea 'Lavender Carpet' were $1\frac{3}{16}$ inches across and not $3\frac{3}{16}$ inches as stated in the report; p. 29—Perennial Phlox 'Fairy's Petticoat', the flower measurement should read $1\frac{4}{4}$ inches and not $4\frac{4}{4}$ inches.

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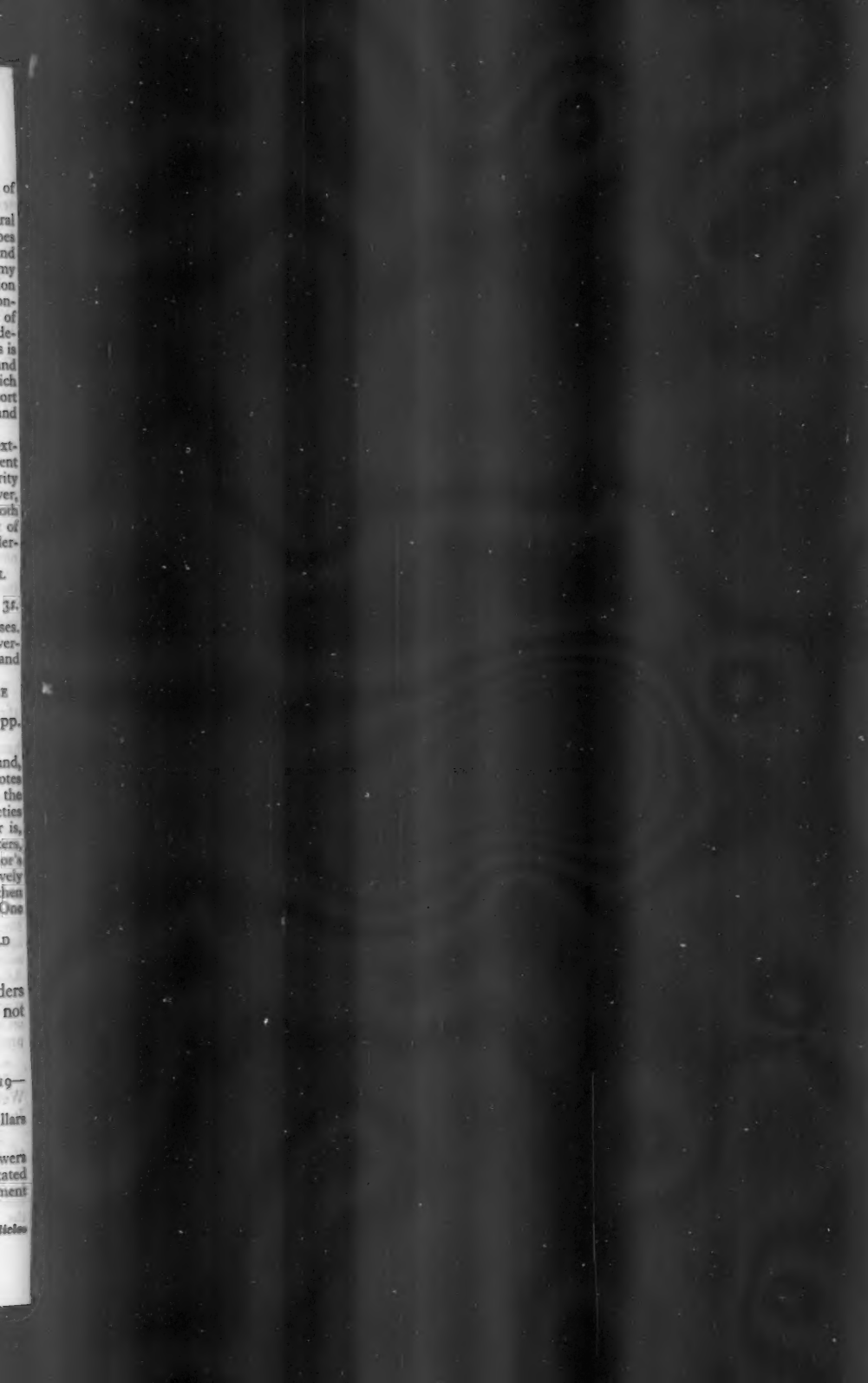

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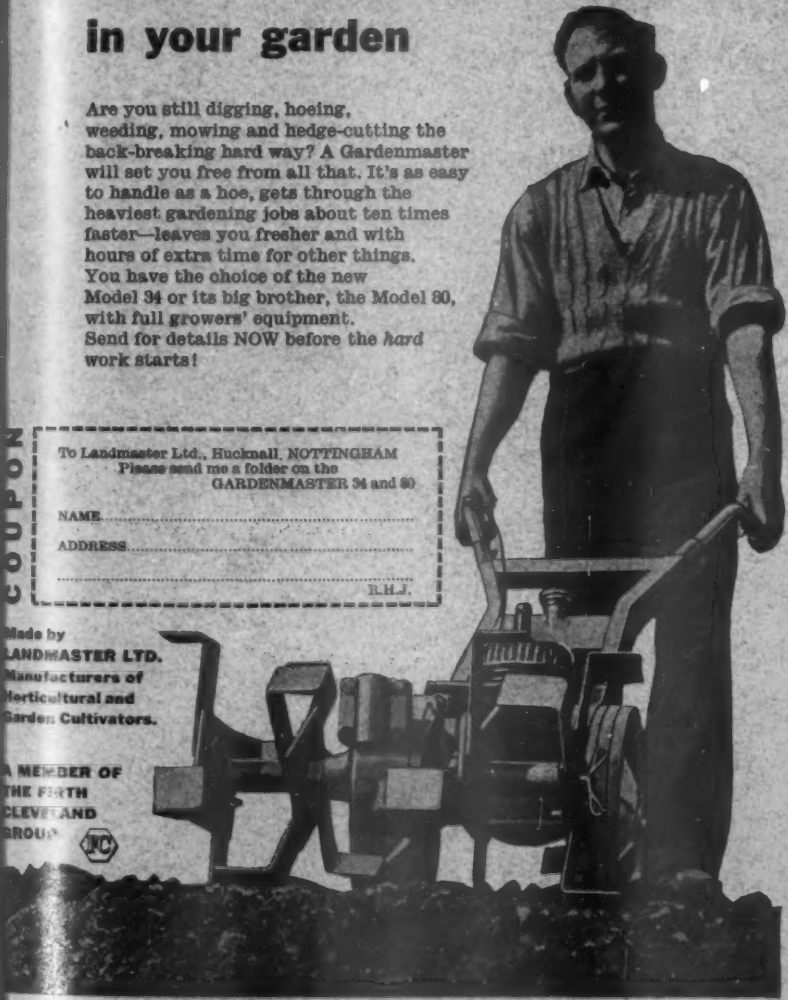

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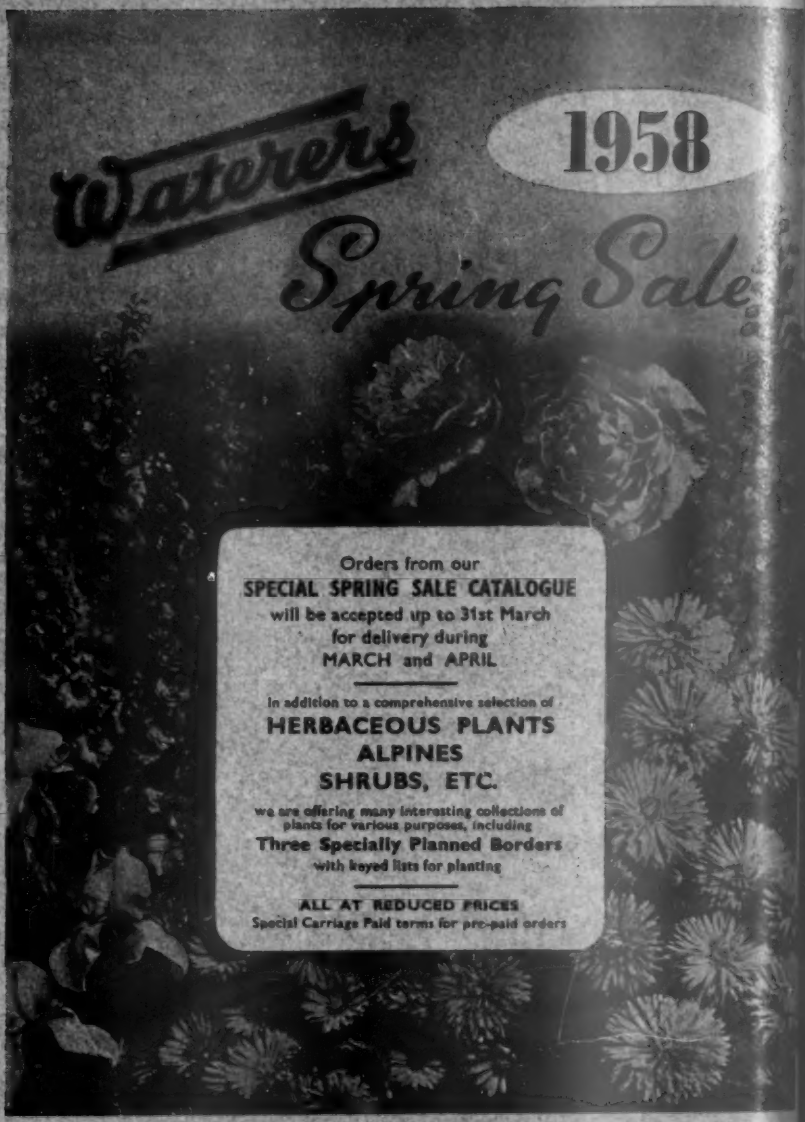
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